



**Mad Science correlations to
The Next Generation Science Standards (NGSS)
for 3rd Grade through 5th Grade**

- Standards Arranged by Topic -

Grade 3

3.Forces and Interactions

Mad Science Programming Correlated to 3-PS2-1:

Fantastic Fliers

Take flight into the world of aeronautics as you discover how the 4 forces of flight help things soar into the sky. Build all kinds of paper aircraft and make a Skyhawk plane to take home to continue your highflying adventure!

Fun-damental Forces

Find out about forces by doing experiments on gravity, centripetal and inertia. Check out a gyroscope, make cars fly down a track and do a few balancing tricks to discover how forces shape motion.

Moving Motion

Children learn all about the forces behind the movement of planes, trains, and automobiles. Catapulting into Newton's laws of motion lets children get a feel for friction, inertia, and gravity. They see how mass affects movement and try out some motion tricks! Children build an action-reaction car to take home.

Rocket Science (NASA)

Students will follow a detailed construction plan to build their very own model rockets 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.

Science of Toys

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.

Space Travel (NASA)

Students 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, students will build a unique Shuttle Copter to take home. For our grand finale, students will witness a thrilling model rocket launch, and learn the meticulous preparations necessary to send up a rocket!

Mad Science Programming correlated to the NGSS

Mad Science Programming Correlated to 3-PS2-2:

Moving Motion

Children learn all about the forces behind the movement of planes, trains, and automobiles. Catapulting into Newton's laws of motion lets children get a feel for friction, inertia, and gravity. They see how mass affects movement and try out some motion tricks! Children build an action-reaction car to take home.

Science of Toys

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.

Mad Science Programming Correlated to 3-PS2-3:

Current Events

Build series and parallel circuits while learning how moving electrons make electricity flow. Test a circuit with a fuse, build a stress tester and challenge your friends to a circuit maze in this electrifying class on the basics of electricity.

Electricity

Excite some electrons as you construct some serious circuits during this program all about electricity. Test various materials for conductivity with space-age plasma balls. Finally, create and play an electronic game.

Magnetic Magic

Explore the power of magnets! Create electromagnets and control a compass needle. See a magnetic accelerator in action. Take home your very own Magnet Lab to continue your research!

Mischievous Magnets

What makes metal magnetic? What shapes do magnetic fields invisibly form around different shaped magnets? Can compasses really help you to find your way? Discover the answers to these and many more questions about magnets and their fields

Science of Toys

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.

Watts Up

Charge up on static electricity! Make indoor lightning and conduct hair-raising experiments with our electro-static generator. Use your Static Stick to test the movement of electrons in your home!

Mad Science Programming correlated to the NGSS

Mad Science Programming Correlated to 3-PS2-4:

Magnetic Magic

Explore the power of magnets! Create electromagnets and control a compass needle. See a magnetic accelerator in action. Take home your very own Magnet Lab to continue your research!

Mischievous Magnets

What makes metal magnetic? What shapes do magnetic fields invisibly form around different shaped magnets? Can compasses really help you to find your way? Discover the answers to these and many more questions about magnets and their fields

Science of Toys

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.

3. Interdependent Relationships in Ecosystems

Mad Science Programming Correlated to 3-LS4-3:

All About Animals

What is an animal? Feathers, fins, fur and more! Children explore the animal kingdom and learn about habitats, anatomy and life cycles of their favorite creatures. They experiment with camouflage, and explore the amazing sounds that animals make. Children step into the shoes of a naturalist and make their own animal track cast to take home.

Bugs!

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!

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy

Mad Science Programming correlated to the NGSS

webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

Mad Science Programming Correlated to 3-LS4-4:

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Black and Blue Oceans

Students will devise and test oil spill techniques in a mock oil spill and learn all about the pollution that plagues the oceans.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

3. Inheritance and Variation of Traits: Life Cycles and Traits

Mad Science Programming Correlated to 3-LS1-1:

All About Animals

What is an animal? Feathers, fins, fur and more! Children explore the animal kingdom and learn about habitats, anatomy and life cycles of their favorite creatures. They experiment with camouflage, and explore the amazing sounds that animals make. Children step into the shoes of a naturalist and make their own animal track cast to take home.

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Mad Science Programming Correlated to 3-LS3-2:

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

Mad Science Programing correlated to the NGSS

Photosynthesis

This workshop provides students with an introduction to photosynthesis, including an understanding of the chemical processes at work in the plant, plant respiration, and the role of plants in food webs.

Mad Science Programing Correlated to 3-LS4-2:

All About Animals

What is an animal? Feathers, fins, fur and more! Children explore the animal kingdom and learn about habitats, anatomy and life cycles of their favorite creatures. They experiment with camouflage, and explore the amazing sounds that animals make. Children step into the shoes of a naturalist and make their own animal track cast to take home.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

3. Weather and Climate

Mad Science Programing Correlated to 3-ESS2-1:

Walloping Weather

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.

Mad Science Programing Correlated to 3-ESS2-2:

Bugs!

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!

Walloping Weather

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

Mad Science Programming correlated to the NGSS

world and stage a statically charged indoor storm. Children take home the color-changing Sun Beads kit to detect ultraviolet light from the sun.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

Mad Science Programming Correlated to 3-ESS3-1:

Wacky Water

Water, water everywhere! Explore the amazing properties of water – density, solvency and surface tension in this hands-on look at how water works. Build a Rescue Diver to take home to continue your underwater explorations.

Watts-Up

Charge up on static electricity! Make indoor lightning and conduct hair-raising experiments with our electro-static generator. Use your Static Stick to test the movement of electrons in your home!

Black and Blue Oceans

Students will devise and test oil spill techniques in a mock oil spill and learn all about the pollution that plagues the oceans.

Grade 4

4. Energy

Mad Science Programming Correlated to 4-PS3-1:

Energy Burst

Children explore the energy of motion (potential versus kinetic energy), and how energy can be conserved. They pop, jump, and flip with hopping, swimming, and swinging toys. Children check out the kinetic energy in rubber, band-wound gadgets and reach their potential with a kinetic marble-bounce take home.

Fun-damental Forces

Find out about forces by doing experiments on gravity, centripetal and inertia. Check out a gyroscope, make cars fly down a track and do a few balancing tricks to discover how forces shape motion.

Moving Motion

Children learn all about the forces behind the movement of planes, trains, and automobiles. Catapulting into Newton's laws of motion lets children get a feel for friction, inertia, and gravity. They see how mass affects movement and try out some motion tricks! Children build an action-reaction car to take home.

Rocket Science (NASA)

Students will follow a detailed construction plan to build their very own model rockets 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.

Science of Toys

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.

Space Travel (NASA)

Students 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, students will build a unique Shuttle Copter to take home. For our grand finale, students will witness a thrilling model rocket launch, and learn the meticulous preparations necessary to send up a rocket!

Mad Science Programming correlated to the NGSS

Mad Science Programming Correlated to 4-PS3-2:

Current Events

Build series and parallel circuits while learning how moving electrons make electricity flow. Test a circuit with a fuse, build a stress tester and challenge your friends to a circuit maze in this electrifying class on the basics of electricity.

Get Connected

Children take on telecommunications and check out the power of sound. They make vibration waves by testing telephone cables, chat on a self-made telephone network, and find the limits to low-power radio signals. Children wind their way through a cell tower relay and learn how to track cell phone users. Children build a pocket oscilloscope to take home!

Good Vibrations

Investigate the science of sound in this hands-on introduction to the basics of vibration, frequency and pitch. Discover how instruments use vibration to make music and you will be amazed as you hear church bells through your fingers and music through your teeth.

Sonic Sounds

Uncover the source of sound! Tap into sound wave transmission and fill your ears with vibrations. Create a story with sound effects and change the pitch of your voice. Use your Sonic Horn to make some noise!

Electricity

Excite some electrons as you construct some serious circuits during this program all about electricity. Test various materials for conductivity with space-age plasma balls. Finally, create and play an electronic game.

Mad Science Programming Correlated to 4-PS3-3:

Energy Burst

Children explore the energy of motion (potential versus kinetic energy), and how energy can be conserved. They pop, jump, and flip with hopping, swimming, and swinging toys. Children check out the kinetic energy in rubber, band-wound gadgets and reach their potential with a kinetic marble-bounce take home.

Moving Motion

Children learn all about the forces behind the movement of planes, trains, and automobiles. Catapulting into Newton's laws of motion lets children get a feel for friction, inertia, and gravity. They see how mass affects movement and try out some motion tricks! Children build an action-reaction car to take home.

Science of Toys

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.

Mad Science Programming correlated to the NGSS

Space Phenomena (NASA)

Students will 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 designed to teach students about reflected light, students watch a model comet form right before their eyes. After exploring the composition of real comets, students will make comet balls to take home with them!

Mad Science Programming Correlated to 4-PS3-4:

Current Events

Build series and parallel circuits while learning how moving electrons make electricity flow. Test a circuit with a fuse, build a stress tester and challenge your friends to a circuit maze in this electrifying class on the basics of electricity.

Get Connected

Children take on telecommunications and check out the power of sound. They make vibration waves by testing telephone cables, chat on a self-made telephone network, and find the limits to low-power radio signals. Children wind their way through a cell tower relay and learn how to track cell phone users. Children build a pocket oscilloscope to take home!

Super Power Sources

Children check out the source behind electric power by working out how to generate electricity and by using mechanical force to turn on light bulbs and fans. They search for renewable and non-renewable resources and find out what makes a battery work. Children take home a hand-crank flashlight as a renewable source of sunshine!

Electricity

Excite some electrons as you construct some serious circuits during this program all about electricity. Test various materials for conductivity with space-age plasma balls. Finally, create and play an electronic game.

Mad Science Programming Correlated to 4-ESS3-1:

Super Power Sources

Children check out the source behind electric power by working out how to generate electricity and by using mechanical force to turn on light bulbs and fans. They search for renewable and non-renewable resources and find out what makes a battery work. Children take home a hand-crank flashlight as a renewable source of sunshine!

4. Waves: Waves and Information

Mad Science Programming Correlated to 4-PS4-1:

Sonic Sounds

Uncover the source of sound! Tap into sound wave transmission and fill your ears with vibrations. Create a story with sound effects and change the pitch of your voice. Use your Sonic Horn to make some noise!

Good Vibrations

Investigate the science of sound in this hands-on introduction to the basics of vibration, frequency and pitch. Discover how instruments use vibration to make music and you will be amazed as you hear church bells through your fingers and music through your teeth.

Mad Science Programming Correlated to 4-PS4-3:

Get Connected

Children take on telecommunications and check out the power of sound. They make vibration waves by testing telephone cables, chat on a self-made telephone network, and find the limits to low-power radio signals. Children wind their way through a cell tower relay and learn how to track cell phone users. Children build a pocket oscilloscope to take home!

Radical Robots

Children focus on service technology! They learn to tell the difference between a robot, an automaton, and a remote control device. Children explore how robots make our lives easier, program a robot to move through an obstacle course, control a robot through sound and light and

Space Technology

Space Technology starts with an exploration of space-related technologies used on Earth. Students will help laser light through a maze, use principles of radar technology to find hidden mountains, and discover the importance of points of reference to depth perception. From there, it's out into space with the launch of a satellite into orbit (at the edge of their desks) and an examination of potential threats to spacecraft. Children will leave revved up by an investigation of shuttle fuel!

Spy Academy

Look out 007—the Mad Science Spy Academy is in session! From decoding messages to metal detectors and night vision, children will have the opportunity to check out spy equipment and even create their own edible messages! They will use the Secret Code Breaker to communicate in code, like real spies. With the Undercover Observer, children step into the shoes of spies in action. What looks like an ordinary camera is actually a sneaky surveillance device that lets children spy on the side.

4. Structure, Function, and Information Processing

Mad Science Programming Correlated to 4-PS4-2:

Lights, Color, Action

Celebrate the science of color! Split your name in ink and reveal numbers with color filters. Make a rainbow out of white light and try on diffraction lenses. Color the world with your very own Technicolor Blender!

Movie Effects

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.

Mad Science Programming Correlated to 4-LS1-1:

All About Animals

What is an animal? Feathers, fins, fur and more! Children explore the animal kingdom and learn about habitats, anatomy and life cycles of their favorite creatures. They experiment with camouflage, and explore the amazing sounds that animals make. Children step into the shoes of a naturalist and make their own animal track cast to take home.

Bugs!

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!

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Photosynthesis

This workshop provides students with an introduction to photosynthesis, including an understanding of the chemical processes at work in the plant, plant respiration, and the role of plants in food webs.

Build Your Bones

This workshop was created in partnership with Lactancia™ for a calcium awareness campaign in Canada. It features experiments for audiences of children in grades K-6 about bone

Mad Science Programming correlated to the NGSS

health. It continues to be run as part of a special event sponsored by a large dairy for Mad Science of Hawaii using state funding.

Mad Science Programming Correlated to 4-LS1-2:

Sonic Sounds

Uncover the source of sound! Tap into sound wave transmission and fill your ears with vibrations. Create a story with sound effects and change the pitch of your voice. Use your Sonic Horn to make some noise!

Tantalizing Taste

Exercise your sense of taste! Magnify your taste buds and unplug your nose. Compare flavors with your friends and try a carbonated test challenge. Sort out the scents in the Scratch 'n Sniff game!

4.Earth's Systems: Processes that Shape the Earth

Mad Science Programming Correlated to 4-ESS1-1:

Earthworks

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 Experi-tube Take-Home. Children can make it and shake it to see sediment settle into layers!

Mineral Mania

Recreate the process of rock formation and devise ways to identify and classify rocks and minerals. Experience the thrill of panning for gems; the gems you find, you can take home for further study and investigation.

Mad Science Programming Correlated to 4-ESS2-2, and 4-ESS3-2:

Earthworks

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 Experi-tube Take-Home. Children can make it and shake it to see sediment settle into layers!

Grade 5

5. Structure and Properties of Matter

Mad Science Programming Correlated to 5-PS1-1:

Junior Reactors

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.

Matter of Fact

Explore molecules and how they are held together. See the dramatic differences between physical and chemical changes as you mix up a batch of your very own Mad Science Putty to take home.

Mad Science Programming Correlated to 5-PS1-3:

Che-Mystery

Discover the differences between chemical and physical reactions. Discover how water can turn into wine, how carbonation makes you burp and what a non-Newtonian fluid is. Make your own bouncing polymer to take home!

Detective Science

Children use science to crack a case! The crime happens just before the Bustertown bake-off. 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.

Earthworks

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 Experi-tube Take-Home. Children can make it and shake it to see sediment settle into layers!

Kitchen Chemistry

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.

Mad Science Programing correlated to the NGSS

Magnetic Magic

Explore the power of magnets! Create electromagnets and control a compass needle. See a magnetic accelerator in action. Take home your very own Magnet Lab to continue your research!

Mission Nutrition

Step into some healthy habits! Put together a food pie and lay out a perfectly proportioned meal. See how much energy burning calories can give you. Clip on your Step-O-Meter and walk on!

Mix It Up

Children shake up solutions and make mixtures with common household elements. They learn about the parts of mixtures and filter soap from a salty solution. Children use a carbon filter to clean up colored water and follow a color-changing experiment to see how useful a suspension can be. Children try out the tools and techniques of mixture sorting and take home a sorting kit.

pH Phactor

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!

Tantalizing Taste

Exercise your sense of taste! Magnify your taste buds and unplug your nose. Compare flavors with your friends and try a carbonated test challenge. Sort out the scents in the Scratch 'n Sniff game!

Wacky Water

Water, water everywhere! Explore the amazing properties of water – density, solvency and surface tension in this hands-on look at how water works. Build a Rescue Diver to take home to continue your underwater explorations.

Watts Up

Charge up on static electricity! Make indoor lightning and conduct hair-raising experiments with our electro-static generator. Use your Static Stick to test the movement of electrons in your home!

Electricity

Excite some electrons as you construct some serious circuits during this program all about electricity. Test various materials for conductivity with space-age plasma balls. Finally, create and play an electronic game.

Matter of Fact

Explore molecules and how they are held together. See the dramatic differences between physical and chemical changes as you mix up a batch of your very own Mad Science Putty to take home.

Mad Science Programming correlated to the NGSS

Mineral Mania

Recreate the process of rock formation and devise ways to identify and classify rocks and minerals. Experience the thrill of panning for gems; the gems you find, you can take home for further study and investigation.

Mischievous Magnets

What makes metal magnetic? What shapes do magnetic fields invisibly form around different shaped magnets? Can compasses really help you to find your way? Discover the answers to these and many more questions about magnets and their fields

Mad Science Programming Correlated to 5-PS1-4:

Chem in a Flash

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.

Che-Mystery

Discover the differences between chemical and physical reactions. Discover how water can turn into wine, how carbonation makes you burp and what a non-Newtonian fluid is. Make your own bouncing polymer to take home!

Detective Science

Discover how science is used to solve crimes. Students learn the importance of “trace evidence,” such as teeth impressions and fingerprints, and how to identify unknown substances at crime scenes. Take home your own ID kit!

Junior Reactors

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.

Kitchen Chemistry

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 Digester Inspector Take-Home.

Mad Science Programming correlated to the NGSS

Mix It Up

Children shake up solutions and make mixtures with common household elements. They learn about the parts of mixtures and filter soap from a salty solution. Children use a carbon filter to clean up colored water and follow a color-changing experiment to see how useful a suspension can be. Children try out the tools and techniques of mixture sorting and take home a sorting kit.

Slime Time

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!

Matter of Fact

Explore molecules and how they are held together. See the dramatic differences between physical and chemical changes as you mix up a batch of your very own Mad Science Putty to take home.

Playing with Polymers

Dissolve Styrofoam with a mystery chemical and make your very own slime to take home and experiment with.

5.Matter and Energy in Organisms and Ecosystems

Mad Science Programming Correlated to 5-PS3-1:

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

Mad Science Programming Correlated to 5-LS1-1:

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

Mad Science Programing correlated to the NGSS

Photosynthesis

This workshop provides students with an introduction to photosynthesis, including an understanding of the chemical processes at work in the plant, plant respiration, and the role of plants in food webs.

Mad Science Programing Correlated to 5-LS2-1:

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

5. Earth's Systems

Mad Science Programing Correlated to 5-ESS2-1:

Earthworks

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 Experi-tube Take-Home. Children can make it and shake it to see sediment settle into layers!

Walloping Weather

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.

Mad Science Programing Correlated to 5-ESS3-1:

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what

Mad Science Programming correlated to the NGSS

humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Super Power Sources

Children check out the source behind electric power by working out how to generate electricity and by using mechanical force to turn on light bulbs and fans. They search for renewable and non-renewable resources and find out what makes a battery work. Children take home a hand-crank flashlight as a renewable source of sunshine!

Wacky Water

Water, water everywhere! Explore the amazing properties of water – density, solvency and surface tension in this hands-on look at how water works. Build a Rescue Diver to take home to continue your underwater explorations.

Black and Blue Oceans

Students will devise and test oil spill techniques in a mock oil spill and learn all about the pollution that plagues the oceans.

Ecosystem Explorations

Investigate the interconnections present in nature. This workshop will introduce students to the elements of ecosystems. Students will build ecosystem models, explore the elements of energy webs, reflect on how humans impact ecosystems, and use field journals for everyday explorations and more.

The Dirt on Garbage

This workshop was created for Earth Day programs in schools for grades K-6 as it features the science behind the 3 R's – reduce, reuse and recycle.

5.Space Systems: Stars and the Solar System

Mad Science Programming Correlated to 5-PS2-1:

Fantastic Fliers

Take flight into the world of aeronautics as you discover how the 4 forces of flight help things soar into the sky. Build all kinds of paper aircraft and make a Skyhawk plane to take home to continue your high flying adventure!

Fun-damental Forces

Find out about forces by doing experiments on gravity, centripetal and inertia. Check out a gyroscope, make cars fly down a track and do a few balancing tricks to discover how forces shape motion.

Living in Space (NASA)

Students will set out on a mission to investigate life in space! Children will see the special adaptations needed to live in space, learn about mission training techniques, and participate in the construction of a model space station. Students go home with a Cosmic Chronometer to keep track of Earth time!

Mad Science Programing correlated to the NGSS

Moving Motion

Children learn all about the forces behind the movement of planes, trains, and automobiles. Catapulting into Newton's laws of motion lets children get a feel for friction, inertia, and gravity. They see how mass affects movement and try out some motion tricks! Children build an action-reaction car to take home.

Rocket Science (NASA)

Students will follow a detailed construction plan to build their very own model rockets 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.

Science of Toys

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.

Space Travel (NASA)

Students 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, students will build a unique Shuttle Copter to take home. For our grand finale, students will witness a thrilling model rocket launch, and learn the meticulous preparations necessary to send up a rocket!

Mad Science Programming Correlated to 5-ESS1-1:

Space Phenomena (NASA)

Students will 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 designed to teach students about reflected light, students watch a model comet form right before their eyes. After exploring the composition of real comets, students will make comet balls to take home with them!

Sun and Stars

Students will investigate the Sun and distant stars, and the galaxies they form. Children will explore stellar life cycles, create new solar systems, and make their own constellations. The class concludes with a 3—dimensional exploration of the Big Dipper that students will be able to take home with them.

Grade 3 – 5

3-5.Engineering Design

Mad Science Programing Correlated to 3-5-ETS1-1:

Current Events

Build series and parallel circuits while learning how moving electrons make electricity flow. Test a circuit with a fuse, build a stress tester and challenge your friends to a circuit maze in this electrifying class on the basics of electricity.

Earthworks

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 Experi-tube Take-Home. Children can make it and shake it to see sediment settle into layers!

Invention-ation

Who gave us Morse code? How about earmuffs or the light bulb? Children will be guided from observation through presentation on their journey to becoming a great inventor.

Super Structures

Calling all junior engineers! Test out the basics of architectural design and structural engineering in this hands-on class about structures. Explore how triangles, arches and bridges shape our structures and apply some engineering to your very own bridge.

Electricity

Mad Science Programing Correlated to 3-5-ETS1-2:

Current Events

Build series and parallel circuits while learning how moving electrons make electricity flow. Test a circuit with a fuse, build a stress tester and challenge your friends to a circuit maze in this electrifying class on the basics of electricity.

Fantastic Fliers

Take flight into the world of aeronautics as you discover how the 4 forces of flight help things soar into the sky. Build all kinds of paper aircraft and make a Skyhawk plane to take home to continue your high flying adventure!

Life in the Sea

The ocean holds many mysteries and deep-sea creatures that seem more alien than earthly. Children learn about the vast range of life found in the sea—from plankton to sponges to whales! Children learn how plants and animals are adapted to their ocean habitats, and find out what humans can do to protect ocean life. Children bring the ocean home with a viewer and 3-D images of some wild underwater wonders.

Mad Science Programing correlated to the NGSS

Mad Machines

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!

Mix It Up

Children shake up solutions and make mixtures with common household elements. They learn about the parts of mixtures and filter soap from a salty solution. Children use a carbon filter to clean up colored water and follow a color-changing experiment to see how useful a suspension can be. Children try out the tools and techniques of mixture sorting and take home a sorting kit.

Super Power Sources

Children check out the source behind electric power by working out how to generate electricity and by using mechanical force to turn on light bulbs and fans. They search for renewable and non-renewable resources and find out what makes a battery work. Children take home a hand-crank flashlight as a renewable source of sunshine!

Super Structures

Calling all junior engineers! Test out the basics of architectural design and structural engineering in this hands-on class about structures. Explore how triangles, arches and bridges shape our structures and apply some engineering to your very own bridge.

Wacky Water

Water, water everywhere! Explore the amazing properties of water – density, solvency and surface tension in this hands-on look at how water works. Build a Rescue Diver to take home to continue your underwater explorations.

Black and Blue Oceans

Students will devise and test oil spill techniques in a mock oil spill and learn all about the pollution that plagues the oceans.

Invention-ation

Who gave us Morse code? How about earmuffs or the light bulb? Children will be guided from observation through presentation on their journey to becoming a great inventor.

Mad Science Programing Correlated to 3-5-ETS1-3:

Invention-ation

Who gave us Morse code? How about earmuffs or the light bulb? Children will be guided from observation through presentation on their journey to becoming a great inventor.