SCHOOL PROGRAMS STANDARDS & ALIGNMENT

Programs are customized to each grade level.

PROGRAM TOPICS

Programs are aligned to National & State Standards, which can be viewed at iSPACEscience.org/standards. Each program is appropriately customized for grade level.

The Art of LEGO® Engineering Grades: PreK-3
Let the creative juices flow! Students will combine engineering and art by constructing LEGO machines that they will use to craft their own work of art.

Storybook Science Grades: PreK-3
Exploring the science in beloved children's literature such as *The Mixed Up Chameleon* or *Sounds All Around,* engages even the youngest scientists through experiments and hands-on activities. Topic choices include sound, kitchen chemistry, magnetism, force and motion, space exploration, color, camouflage and more!

Fun with Fizz Grades: PreK-3
Young scientists create crazy concoctions where raisins dance, rocks pop, blobs bob and fountains foam. Density, properties of matter and reactions are all part of the fizzy fun concepts explored.

Living and Working in Space Grades PreK-5
Students can find out if they "have the right stuff" to live and work like an astronaut in space. Activities may include building robot end effectors, practicing tasks wearing "space gloves" and investigating space food!

SOUNDS Like Fun to Me Grades: PreK-5
Students will investigate the many ways of making sounds and discover how it travels through different substances. They experiment with waves, vibrations and make an imaginative sound device.

Scaling the Solar System Grades: PreK-6
Just how far away is the moon from Earth? How giant are those gaseous giants found within our solar system? Out-of-this-world activities will model scale-to-distance and scale-to-size concepts. We think your students will be surprised with what they discover!

Peculiar Polymers Grades: PreK-6
What do contact lenses, milk jugs, plastic bags and chewing gum all have in common? They are all made from synthetic (man-made) polymers. Using a variety of hands-on activities, students will be introduced to polymers, their properties and everyday uses. Get set for an ooey-gooey good time.

There's More to LIGHT than Meets the Eye Grades: PreK-6
Students discover how astronomers use light to explore our universe! They will investigate properties of both visible and invisible light through a variety of activities that may include designing an ultraviolet radiation detector or constructing a spectroscope that will allow them to look at the "fingerprints" of different sources of visible light.

LEGO Engineering Grades: PreK-6
Calling all LEGO- Maniacs!. Students investigate the principles of engineering as they work in teams to build and test simple and compound machines using LEGO Educational kits. Extend engineering skills with motorized, green energy or pneumatic/hydraulic options.

Blast Off – Rocketry Grades: PreK-12
Blast off with Sir Isaac Newton and explore his three laws of motion through paper or straw rocketry activities. Investigate aerodynamics while building and launching paper or straw rockets with some specially designed high-powered air launchers. Guaranteed to be a BLAST!

LEGO WeDo Robots Grades: 2-4
Get ready for a safari full of LEGO models that "come to life" when students program them on a computer. Model options include a lion that roars and snores, an alligator that chomps, a monkey that drums out a variety of rhythms, twirling birds and more.

LEGO MINDSTORMS Robots – RoboArt Grades: 4+
Can a robot create art? Robots are beginning to take their place in both visual and performing arts. Explore how they are making their artistic impressions and program a LEGO MINDSTORMS robot to create a patterned art masterpiece!

LEGO MINDSTORMS Robots Grades: 4+
Will robots replace astronauts in space? What about jobs here on Earth? See what types of robots NASA is using in space exploration as well as robots that impact our everyday lives. Students program autonomous robots and teach them to make decisions using sensors in order to master a variety of robotic challenges.

Field Trip to the Moon Grades: 4+
Students work in teams and use critical thinking skills, problem-solving techniques and an understanding of complex systems as they find solutions to the challenge of setting up a lunar base. They evaluate and assimilate information presented by other teams, forcing them to re-evaluate their original decisions and explore alternative solutions.

NASA Mass Versus Weight Grades: 4+
The activities focus on Newton's Laws of Motion and demonstrate the differences between mass and weight by comparing results with video clips filmed by astronauts performing similar activities onboard the International Space Station.

iMISSION: Space Base Simulation Grades: 4+
Mission Control is calling educators to be advised that an iMISSION is not an ordinary field trip! Students are immersed into the various roles of living and working on a lunar research base and will be challenged to apply STEM skills in this fun and unique learning experience. Problem-solving, teamwork and communication skills become key elements and crew members discover that the combined efforts of many teams are required for successful completion of the simulation's activities as well as any emergencies the crew may encounter on their adventure. *Only available at iSPACE facility.*

REQUEST A PROGRAM!

For more information or to request a program, visit iSPACEscience.org.

The Art of LEGO® Engineering PreK-3

Calling all LEGO- Maniacs! Students get in gear and build machines using gears, pulleys, levers, wheels/axles and much more. They investigate the principles of simple machines, mechanisms and structures as they work in teams to build simple and compound machines using LEGO Educational kits. *Extend engineering skills with motorized or pneumatic/hydraulic options.*

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties

Fun with Fizz Grades: PreK-3

Young scientists enjoy creating crazy concoctions where raisins dance, rocks pop, blobs bob, and fountains foam. Density, properties of matter, chemical and physical reactions are all part of the science concepts explored in this fizzy, fun-filled program!

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties
PS	K	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties
ES	1	Sun, Energy and Weather	The physical properties of water change
PS	1	Motion & Materials	Properties of objects and materials change
ES	3	Earth's Resources	Earth's nonliving resources have specific properties
PS	3	Matter & Forms of Energy	Matter exists in different states, each of which has different properties
PS	3	Matter & Forms of Energy	Heat, electricity, light and sound are forms of energy
Science Inquiry & Application Skills			
	PreK-4		Observe and ask questions about the natural environment
			Plan and conduct simple investigations
			Employ simple equipment and tools to gather data and extend the senses
			Use appropriate mathematics with data to construct reasonable explanations
			Communicate about observations, investigations and explanations
			Review and ask questions about the observations and explanations of others
Technological & Engineering Design			
	PreK-4		Understand goals of physical, informational and bio-related technologies
	5-8		Understand how all technologies have changed over time

SOUNDS Like Fun to Me Grades PreK-5

Students investigate the many ways of making sounds and discover how it travels through different substances. They experiment with waves, explore vibrations and make an imaginative musical instrument.

Ohio Standards Alignment	Strand	Grade	Topic	Content Statement
	PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties.
	PS	K	Observations of Objects & Materials	Many objects can be made to produce sound.
	PS	K	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties.
	PS	K	Properties of Everyday Objects & Materials	Some objects and materials produce sound.
	PS	3	Matter & Forms of Energy	All objects and substances in the natural world are composed of matter.
	PS	3	Matter & Forms of Energy	Heat, electricity, light and sound are forms of energy.
	PS	4	Electricity, Heat & Matter	Energy can be transformed from one form to another or can be transferred from one location to another.
	PS	5	Light, Sound & Motion	The amount of change in movement of an object is based on the weight (mass) of the object and the amount of force exerted.
	PS	5	Light, Sound & Motion	Light and sound are forms of energy that behave in predictable ways.
Standards for Mathematical Practice		PreK-12		Make sense of problems and persevere in solving them
				Construct viable arguments and critique the reasoning of others
Science Inquiry & Application Skills		PreK-4		Observe and ask questions about the natural environment
				Employ simple equipment and tools to gather data and extend the senses
				Communicate about observations, investigations and explanations
				Review and ask questions about the observations and explanations of others
		5-8		Identify questions that can be answered through scientific investigation
				Use appropriate mathematics, tools and techniques to gather data and information
				Develop descriptions, models, explanations and predictions
				Think critically and logically to connect evidence and explanations
Technological & Engineering Design		PreK-4		Understand the design process, role of troubleshooting
				Understand how physical technologies impact humans

Scaling the Solar System Grades PreK-6

Just how far away is the moon from Earth? How giant are those gaseous giants found within our solar system? Out-of-the-world activities will model scale-to-distance and scale-to-size concepts. We think your students will be surprised with what they discover!

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
ES	PreK	Observations of Nature	The sun and the moon are visible at different times of the day or night
ES	PreK	Observations of Nature	Water can be observed as lakes, ponds, rivers, streams, the ocean, rainfall, hail, sleet or snow
ES	PreK	Observations of Nature	Rocks and soil have properties that can help identify them
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties
PS	PreK	Observations of Objects & Materials	Many objects can be made to produce sound
ES	PreK	Daily & Seasonal Changes	The moon, sun and stars are visible at different times of the day or night
PS	K	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties
ES	1	Sun, Energy & Weather	The sun is the principal source of energy
ES	1	Sun, Energy & Weather	The physical properties of water change
LS	1	Basic Needs of Living Things	Living things have basic needs, which are met by obtaining materials from the physical environment
LS	1	Basic Needs of Living Things	Living things survive only in environments that meet their needs
ES	2	The Atmosphere	The atmosphere is made up of air
ES	2	The Atmosphere	Water is present in the air
ES	2	The Atmosphere	Long- and short-term weather changes occur due to changes in energy
PS	2	Changes in Motion	Forces change the motion of an object
LS	2	Interactions within Habitats	Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today
ES	3	Earth's Resources	Earth's nonliving resources have specific properties
ES	3	Earth's Resources	Earth's resources can be used for energy
ES	3	Earth's Resources	Some of Earth's resources are limited
PS	3	Matter & Forms of Energy	All objects and substances in the natural world are composed of matter
PS	3	Matter & Forms of Energy	Matter exists in different states, each of which has different properties
PS	3	Matter & Forms of Energy	Heat, electricity, light and sound are forms of energy
ES	4	Earth's Surface	Earth's surface has specific characteristics and landforms that can be identified
ES	4	Earth's Surface	The surface of Earth changes due to weathering
ES	4	Earth's Surface	The surface of Earth changes due to erosion and deposition
PS	4	Electricity, Heat & Matter	Energy can be transformed from one form to another or can be transferred from one location to another.
LS	4	Earth's Living History	Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful
ES	5	Cycles & Patterns in the Solar System	The solar system includes the sun and all celestial bodies that orbit the sun
ES	5	Cycles & Patterns in the Solar System	Each planet in the solar system has unique characteristics. The sun is one of many stars that exist in the universe
ES	5	Cycles & Patterns in the Solar System	Most of the cycles and patterns of motion between the Earth and sun are predictable
PS	5	Light, Sound & Motion	Light and sound are forms of energy that behave in predictable ways
Science Inquiry & Application Skills			
	PreK-4		Observe and ask questions about the natural environment
			Plan and conduct simple investigations
			Employ simple equipment and tools to gather data and extend the senses
			Use appropriate mathematics with data to construct reasonable explanations
			Communicate about observations, investigations and explanations
			Review and ask questions about the observations and explanations of others
	5-8		Use appropriate mathematics, tools and techniques to gather data and information
			Develop descriptions, models, explanations and predictions
			Think critically and logically to connect evidence and explanations
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions
			Understand the design process, role of troubleshooting
			Understand goals of physical, informational and bio-related technologies
			Understand how physical technologies impact humans
	5-8		Understand and be able to select and use physical and informational technologies
			Understand how all technologies have changed over time
			Recognize role of design and testing in the design process
			Apply research, innovation and invention to problem solving

Peculiar Polymers Grades: PreK-6

What do contact lenses, milk jugs, plastic bags and chewing gum all have in common? They are all made from synthetic (man-made) polymers. Using a variety of hands-on activities, students will be introduced to polymers, their properties and everyday uses. Get set for a ooey-gooey good time.

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties.
PS	PreK	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties.
PS	6	Matter & Motion	All matter is made up of small particles called atoms.
Technological & Engineering Design			
	PreK		Understand goals of physical, informational and bio-related technologies
			Understand how physical technologies impact humans
	5-8		Understand and be able to select and use physical and informational technologies

There's More to LIGHT than Meets the Eye Grades: PreK-6

Students discover how astronomers use light to explore our universe! Activities that allow students to investigate properties of both visible and invisible light include investigating infrared light, designing an ultraviolet radiation detector and constructing their own spectroscope that will allow them to look at the "fingerprints" of different sources of visible light and more.

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
ES	PreK	Observations of Nature	The sun and the moon are visible at different times of the day or night
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties
ES	K	Daily & Seasonal Changes	The moon, sun and stars are visible at different times of the day or night
PS	K	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties
ES	1	Sun, Energy & Weather	The sun is the principal source of energy
PS	1	Motion & Materials	Properties of objects and materials change
PS	3	Matter & Forms of Energy	Heat, electricity, light and sound are forms of energy
ES	5	Cycles & Patterns in the Solar System	The sun is one of many stars that exist in the universe
ES	5	Cycles & Patterns in the Solar System	Most of the cycles and patterns of motion between the Earth and sun are predictable
PS	5	Light, Sound & Motion	Light and sound are forms of energy that behave in predictable ways
Standards for Mathematical Practice			
	PreK-12		Construct viable arguments and critique the reasoning of others
Science Inquiry & Application Skills			
	PreK-4		Observe and ask questions about the natural environment
			Plan and conduct simple investigations
			Employ simple equipment and tools to gather data and extend the senses
			Use appropriate mathematics with data to construct reasonable explanations
			Communicate about observations, investigations and explanations
			Review and ask questions about the observations and explanations of others
	5-8		Identify questions that can be answered through scientific investigation
			Design and conduct a scientific investigation
Technological & Engineering Design			
	PreK-4		Understand the design process, role of troubleshooting
			Understand goals of physical, informational and bio-related technologies
			Understand how physical technologies impact humans
	5-8		Understand how all technologies have changed over time

LEGO® Engineering Grades: PreK-6

Calling all LEGO- Maniacs! Students get in gear and build machines using gears, pulleys, levers, wheels/axles and much more. They investigate the principles of simple machines, mechanisms and structures as they work in teams to build simple and compound machines using LEGO Educational kits. *Extend engineering skills with motorized or pneumatic/hydraulic options.*

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties
PS	K	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties
PS	1	Motion & Materials	Properties of objects and materials change
PS	1	Motion & Materials	Objects can be moved in a variety of ways, such as straight, zigzag,circular, and back and forth
PS	2	Changes in Motion	Forces change the motion of an object
ES	3	Earth's Resources	Earth's nonliving resources have specific properties
ES	3	Earth's Resources	Earth's resources can be used for energy
ES	3	Earth's Resources	Some of Earth's resources are limited
PS	3	Matter & Forms of Energy	Heat, electricity, light and sound are forms of energy
PS	4	Electricity, Heat & Matter	The total amount of matter is conserved when it undergoes a change
PS	4	Electricity, Heat & Matter	Energy can be transformed from one form to another or can be transferred from one location to another
PS	5	Light, Sound & Motion	The amount of change in movement of an object is based on the weight (mass) of the object and the amount of force exerted.
PS	6	Matter & Motion	There are two categories of energy: kinetic and potential
PS	6	Matter & Motion	An object's motion can be described by its speed and the direction in which it is moving
Standards for Mathematical Practice			
	PreK - 12		Make sense of problems and persevere in solving them
			Reason abstractly and quantitatively
			Construct viable arguments and critique the reasoning of others
			Model with mathematics
			Use appropriate tools strategically
			Attend to precision
			Look for and make use of structure
			Look for and express regularity in repeated reasoning
Science Inquiry & Application Skills			
	PreK-4		Observe and ask questions about the natural environment
			Plan and conduct simple investigations
			Employ simple equipment and tools to gather data and extend the senses
			Use appropriate mathematics with data to construct reasonable explanations
			Communicate about observations, investigations and explanations
			Review and ask questions about the observations and explanations of others
	5-8		Design and conduct a scientific investigation
			Use appropriate mathematics, tools and techniques to gather data and information
			Analyze and interpret data
			Develop descriptions, models, explanations and predictions
			Think critically and logically to connect evidence and explanations
			Recognize and analyze alternative explanations and predications
			Communicate scientific procedures and explanations
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions
			Understand the design process, role of troubleshooting
			Understand goals of physical, informational and bio-related technologies

Blast Off-Rocketry Grades PreK-12

Blast off with Sir Isaac Newton and explore his three laws of motion through paper or straw rocketry activities. Investigate aerodynamics while building and launching paper or straw rockets with some specially designed high-powered air launchers. Guaranteed to be a BLAST!

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	PreK	Observations of Objects & Materials	Objects and materials are described by their properties
PS	K	Properties of Everyday Objects & Materials	Objects and materials can be sorted and described by their properties
PS	1	Motion & Materials	Properties of objects and materials change
PS	1	Motion & Materials	Objects can be moved in a variety of ways, such as straight, zigzag,circular, and back and forth
ES	2	The Atmosphere	The atmosphere is made up of air
PS	2	Changes in Motion	Forces change the motion of an object
ES	3	Earth's Resources	Earth's nonliving resources have specific properties
PS	3	Matter & Forms of Energy	Matter exists in different states, each of which has different properties
PS	5	Light, Sound & Motion	The amount of change in movement of an object is based on the weight (mass) of the object and the amount of force exerted
PS	6	Matter & Motion	There are two categories of energy: kinetic and potential
PS	6	Matter & Motion	An object's motion can be described by its speed and the direction in which it is moving
PS	8	Forces & Motion	Forces have magnitude and direction
Standards for Mathematical Practice			
	PreK - 12		Make sense of problems and persevere in solving them[o]
			Reason abstractly and quantitatively[o]
			Construct viable arguments and critique the reasoning of others
			Model with mathematics
			Use appropriate tools strategically[o]
			Attend to precision
			Look for and make use of structure[o]
			Look for and express regularity in repeated reasoning[o]
Science Inquiry & Application Skills			
	PreK-4		Plan and conduct simple investigations
			Employ simple equipment and tools to gather data and extend the senses[o]
			Use appropriate mathematics with data to construct reasonable explanations[o]
			Communicate about observations, investigations and explanations
			Review and ask questions about the observations and explanations of others
	5-8		Identify questions that can be answered through scientific investigations
			Design and conduct a scientific investigation[o]
			Use appropriate mathematics, tools and techniques to gather data and information[o]
			Analyze and interpret data[o]
			Develop descriptions, models, explanations and predictions
			Think critically and logically to connect evidence and explanations
			Recognize and analyze alternative explanations and predications[o]
			Communicate scientific procedures and explanations[o]
	9-12		Identify questions and concepts that guide scientific investigations[o]
			Design and conduct scientific investigation[o]
			Use technology and mathematics to improve investigations and communications[o]
			Formulate and revise explanations and models using logic and evidence (critical thinking)
			Recognize and analyze explanations and models
			Communicate and support a scientific argument
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions
			Understand the design process, role of troubleshooting
			Understand goals of physical, informational and bio-related technologies[o]
			Understand how physical technologies impact humans[o]
	5-8		Understand and be able to select and use physical and informational technologies
			Understand how all technologies have changed over time[o]
			Recognize role of design and testing in the design process
			Apply research, innovation and invention to problem solving[o]
	9-12		Identify a problem or need, consider design criteria and constraints[o]
			Apply research, development, experimentation and redesign based on feedback to problem solving[o]
			Build, test and evaluate a model or prototype that solves a problem or a need[o]

[o] - met with extended length program

LEGO WeDo Robots Grades 2-4

Get ready for a safari full of LEGO models that "come to life" when students program them on a computer. Model options include a lion that roars and snores, an alligator that chomps, a monkey that drums out a variety of rhythms, twirling birds and more.

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	2	Changes in Motion	Forces change the motion of an object
Standards for Mathematical Practice			
	PreK - 12		Make sense of problems and persevere in solving them
			Reason abstractly and quantitatively
			Construct viable arguments and critique the reasoning of others
			Model with mathematics
			Use appropriate tools strategically
			Attend to precision
			Look for and make use of structure
			Look for and express regularity in repeated reasoning
Science Inquiry & Application Skills			
	PreK-4		Plan and conduct simple investigations
			Employ simple equipment and tools to gather data and extend the senses
			Use appropriate mathematics with data to construct reasonable explanations
			Communicate about observations, investigations and explanations
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions
			Understand the design process, role of troubleshooting
			Understand goals of physical, informational and bio-related technologies
			Understand how physical technologies impact humans

LEGO Mindstorm Robots - SpaceBots RCX, NXT and EV3 Grades: 4+

Will robots replace astronauts in space? What about jobs here on Earth? See what types of robots NASA is using in space exploration as well as robots that impact our everyday lives. Students program autonomous robots and teach them "to think" (artificial intelligence) using sensors in order to master a variety of robotic challenges.

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	4	Electricity, Heat & Matter	Energy can be transformed from one form to another or can be transferred from one location to another
PS	5	Light, Sound & Motion	The amount of change in movement of an object is based on the weight (mass) of the object and the amount of force exerted
PS	6	Matter & Motion	There are two categories of energy: kinetic and potential
PS	6	Matter & Motion	An object's motion can be described by its speed and the direction in which it is moving
PS	7	Conservation of Mass & Energy	Energy can be transformed from one form to another or can be transferred from one location to another, but is never lost. Energy can be transferred through a variety of ways
PS	8	Forces & Motion	Forces between objects act when the objects are in direct contact or when they are not touching
PS	8	Forces & Motion	Forces have magnitude and direction
PS	9/10	Forces & Motion	Displacement, velocity, and acceleration Objects at rest
PS	9/10	Forces & Motion	Objects moving with constant velocity
PS	9/10	Forces & Motion	Accelerating objects
Standards for Mathematical Practice			
	PreK - 12		Make sense of problems and persevere in solving them Reason abstractly and quantitatively Construct viable arguments and critique the reasoning of others Model with mathematics Use appropriate tools strategically Attend to precision Look for and make use of structure Look for and express regularity in repeated reasoning
Science Inquiry & Application Skills			
	PreK-4		Plan and conduct simple investigations Employ simple equipment and tools to gather data and extend the senses Use appropriate mathematics with data to construct reasonable explanations Communicate about observations, investigations and explanations
	5-8		Identify questions that can be answered through scientific investigations Design and conduct a scientific investigation° Use appropriate mathematics, tools and techniques to gather data and information° Analyze and interpret data° Develop descriptions, models, explanations and predictions Think critically and logically to connect evidence and explanations Recognize and analyze alternative explanations and predications° Communicate scientific procedures and explanations°
	Grades 9-12		Identify questions and concepts that guide scientific investigations Design and conduct scientific Use technology and mathematics to improve investigations and communications Formulate and revise explanations and models using logic and evidence (critical thinking) Recognize and analyze explanations and models Communicate and support a scientific arguments
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions Understand the design process, role of troubleshooting Understand goals of physical, informational and bio-related technologies Understand how physical technologies impact humans
	Grades 5-8		Understand how all technologies have changed over time Recognize role of design and testing in the design process Apply research, innovation and invention to problem solving
	Grades 9-12		Demonstrate an understanding of the relationship among people, technology, engineering and the environment Identify a problem or need, consider design criteria and constraints Integrate multiple disciplines when problem solving Synthesize technological and engineering knowledge and design in problem solving Apply research, development, experimentation and redesign based on feedback to problem solving Build, test and evaluate a model or prototype that solves a problem or a need

LEGO Mindstorm Robots - RoboArt Grades 4+

Can a robot create art? Robots are beginning to take their place in both visual and performing arts. Explore how they are making their artistic impressions and program a LEGO Mindstorms RCX robot to create your own patterned art masterpiece!

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
PS	4	Electricity, Heat & Matter	Energy can be transformed from one form to another or can be transferred from one location to another
PS	5	Light, Sound & Motion	The amount of change in movement of an object is based on the weight (mass) of the object and the amount of force exerted
PS	6	Matter & Motion	There are two categories of energy: kinetic and potential
PS	6	Matter & Motion	An object's motion can be described by its speed and the direction in which it is moving
PS	7	Conservation of Mass & Energy	Energy can be transformed from one form to another or can be transferred from one location to another, but is never lost. Energy can be transferred through a variety of ways
PS	8	Forces & Motion	Forces between objects act when the objects are in direct contact or when they are not touching
PS	8	Forces & Motion	Forces have magnitude and direction
PS	9/10	Forces & Motion	Displacement, velocity, and acceleration Objects at rest
PS	9/10	Forces & Motion	Objects moving with constant velocity
PS	9/10	Forces & Motion	Accelerating objects
Standards for Mathematical Practice			
	PreK - 12		Make sense of problems and persevere in solving them Reason abstractly and quantitatively Construct viable arguments and critique the reasoning of others Model with mathematics Use appropriate tools strategically Attend to precision Look for and make use of structure Look for and express regularity in repeated reasoning
Science Inquiry & Application Skills			
	PreK-4		Plan and conduct simple investigations Employ simple equipment and tools to gather data and extend the senses Use appropriate mathematics with data to construct reasonable explanations Communicate about observations, investigations and explanations
	5-8		Identify questions that can be answered through scientific investigations Design and conduct a scientific investigation° Use appropriate mathematics, tools and techniques to gather data and information° Analyze and interpret data° Develop descriptions, models, explanations and predictions Think critically and logically to connect evidence and explanations Recognize and analyze alternative explanations and predications° Communicate scientific procedures and explanations°
	Grades 9-12		Identify questions and concepts that guide scientific investigations Design and conduct scientific Use technology and mathematics to improve investigations and communications Formulate and revise explanations and models using logic and evidence (critical thinking) Recognize and analyze explanations and models Communicate and support a scientific arguments
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions Understand the design process, role of troubleshooting Understand goals of physical, informational and bio-related technologies Understand how physical technologies impact humans
	Grades 5-8		Understand how all technologies have changed over time Recognize role of design and testing in the design process Apply research, innovation and invention to problem solving
	Grades 9-12		Demonstrate an understanding of the relationship among people, technology, engineering and the environment Identify a problem or need, consider design criteria and constraints Integrate multiple disciplines when problem solving Synthesize technological and engineering knowledge and design in problem solving Apply research, development, experimentation and redesign based on feedback to problem solving Build, test and evaluate a model or prototype that solves a problem or a need

iMISSION: Spaceflight Simulation Grades 4+

Mission Control calling educators, be advised that an iMISSION is not an ordinary field trip! Students are immersed into the various roles of living and working on a lunar research base and will be challenged to apply STEM skills in this fun and unique learning experience. Problem-solving, teamwork and communication skills become key elements for successful completion of the simulation's activities as well as any "emergencies" the crew may encounter on their adventure. Only available at iSPACE facility. Content varies based on students' assigned position in program

Ohio Standards Alignment

Strand	Grade	Topic	Content Statement
ES	6	Rocks, Minerals & Soil	Minerals have specific, quantifiable properties
ES	6	Rocks, Minerals & Soil	Igneous, metamorphic and sedimentary rocks have unique characteristics that can be used for identification and/or classification
ES	6	Rocks, Minerals & Soil	Soil is unconsolidated material that contains nutrient matter and weathered rock
Standards for Mathematical Practice			
	PreK - 12		Make sense of problems and persevere in solving them
			Construct viable arguments and critique the reasoning of others
			Use appropriate tools strategically
			Attend to precision
Science Inquiry & Application Skills			
	PreK-4		Observe and ask questions about the natural environment.
			Plan and conduct simple investigations.
			Employ simple equipment and tools to gather data and extend the senses.
			Use appropriate mathematics with data to construct reasonable explanations.
			Communicate about observations, investigations and explanations
	5-8		Identify questions that can be answered through scientific investigation
			Use appropriate mathematics, tools and techniques to gather data and information
			Analyze and interpret data
			Think critically and logically to connect evidence and explanations
			Communicate scientific procedures and explanations
	9-12		Use technology and mathematics to improve investigations and communications
			Formulate and revise explanations and models using logic and evidence (critical thinking)
			Recognize and analyze explanations and models
			Communicate and support a scientific argument
Technological & Engineering Design			
	PreK-4		Identify problems and potential technological/engineering solutions
			Understand the design process, role of troubleshooting
			Understand goals of physical, informational and bio-related technologies
			Understand how physical technologies impact humans
	Grades 5-8		Understand and be able to select and use physical and informational technologies
			Recognize role of design and testing in the design process
			Apply research, innovation and invention to problem solving
	Grades 9-12		Identify a problem or need, consider design criteria and constraints Integrate multiple disciplines when problem solving
			Synthesize technological and engineering knowledge and design in problem solving
			Build, test and evaluate a model or prototype that solves a problem or a need