

SCIENTISTS IN SCHOOL™

2016-17 WORKSHOP CATALOGUE

Kindergarten to Grade 8 science, technology, engineering and math (STEM) programs



**NIAGARA REGION, HAMILTON-WENTWORTH,
BRANTFORD, BRANT, HALDIMAND
AND NORFOLK COUNTIES**



Book online at scientistsinschool.ca. Book early to get your preferred topic and date.

Since 1989, Scientists in School™ has inspired elementary students and teachers to explore and investigate science, technology, engineering, math, and the environment through fun workshops where students become the scientists. Our presenters have expertise in different STEM fields, and extensive experience working with children.

Our workshops:

- ✓ Are inquiry-based and hands-on
- ✓ Are half-day, in-class
- ✓ Enrich and extend the science, technology and math curricula
- ✓ Help to develop critical thinking, problem-solving and teamwork skills

How to Book a Workshop:

ONLINE:

Choose your topic(s) and book online at scientistsinschool.ca.

BY FAX OR MAIL:

1. Choose your topic(s), complete this booking form and copy for your files.
2. Fax or mail this booking form to:
 Scientists in School
 P.O. Box 660
 Fonthill, Ontario L0S 1E0
 Tel/Fax: 905.892.9146
sco@scientistsinschool.ca
3. Mail a deposit of \$25 per workshop with a copy of this booking form, or the email confirmation, to:
NEW ADDRESS
 Scientists in School
 975 Dillingham Road, Unit 2
 Pickering, Ontario L1W 1Z7
 Note: Please make the cheque payable to **Scientists in School**.
4. Your presenter will contact you within 1 week to schedule a date. Book early to ensure that you get your preferred day.

Other Information:

Maximum class size: To ensure every child gets a hands-on experience, the maximum number of students is 30.

Allergy Advisory: Our presenters bring many different materials into the classroom. While we regularly maintain our workshop kits for cleanliness and safety, we cannot guarantee they are free from all allergens. Please advise us of any known allergies or special restrictions.

Booking Terms, Conditions and our Cancellation Policy can be found at scientistsinschool.ca/policies.

Application Date: _____ Board: _____

Tel: _____ Fax: _____ School: _____

BOOKING #1

Teacher: _____ Grade: _____ Class Size: _____

Email: _____ Preferred Month: _____

Topic: _____ Time: A.M. P.M.

Alternate Topic: _____ Time: A.M. P.M.

Special Notes: _____

Yes! Please add me to your email database to receive updates from Scientists in School.

BOOKING #2

Teacher: _____ Grade: _____ Class Size: _____

Email: _____ Preferred Month: _____

Topic: _____ Time: A.M. P.M.

Alternate Topic: _____ Time: A.M. P.M.

Special Notes: _____

Yes! Please add me to your email database to receive updates from Scientists in School.

BOOKING #3

Teacher: _____ Grade: _____ Class Size: _____

Email: _____ Preferred Month: _____

Topic: _____ Time: A.M. P.M.

Alternate Topic: _____ Time: A.M. P.M.

Special Notes: _____

Yes! Please add me to your email database to receive updates from Scientists in School.

BOOKING #4

Teacher: _____ Grade: _____ Class Size: _____

Email: _____ Preferred Month: _____

Topic: _____ Time: A.M. P.M.

Alternate Topic: _____ Time: A.M. P.M.

Special Notes: _____

Yes! Please add me to your email database to receive updates from Scientists in School.

Thank you for booking a Scientists in School™ workshop.
Contact us at any time to check your booking status.

2016-17 SCIENTISTS IN SCHOOL™ CLASSROOM WORKSHOPS

Book your workshop today at scientistsinschool.ca or by using the provided booking form

KINDERGARTEN

BACKYARD BUGS

'Bee' an entomologist. Meet the insect family and discover their unique anatomy. Develop a new appreciation of bugs by investigating how they behave, eat, see and hear. Help a butterfly play hide and seek using camouflage. See the world through the eyes of a dragonfly. Identify interesting backyard bugs and make a butterfly to take home.



Credit: M.A. Griffin

I CAN BE A SCIENTIST

Become a working scientist. Dig for dinosaur bones and make a fossil as a paleontologist. Explore the weather as a meteorologist and study ocean life as a marine biologist. Become an astronomer and discover the Big Dipper in our constellation tent. Use a lab coat and safety goggles to find the solution as a chemist in the lab.

MAGNET MAGIC FOR LITTLE EXPLORERS

Uncover the power of attraction by investigating magnets. Explore how magnets push and pull. Discover what magnets find attractive and if magnetic forces work through a variety of materials. Search for sandbox treasures, go fishing and catch a fish to take home.

SIMPLY MARVELLOUS MACHINES

Discover how often you use simple machines in everyday life. Find simple machines at the playground as you slide down an inclined plane, use a wedge in the sandbox and make a teeter-totter to take home. Explore how to make bubbles using gears, discover that wedges have edges and investigate the mechanical advantage of using levers.

THERE'S NO PLACE LIKE HOME!

Follow the footprints and other clues to find the home of the mystery animal. Develop a respect for the environment by learning about a variety of habitats. Become a bird and build a nest in a tree using your beak. Slither like a snake or dig like a mole through your underground tunnel. Discover what creatures may be living in a log near your home.



"How do you keep students engaged and learning? Book Scientists in School! The presenters are knowledgeable, engaging and professional. The activities are geared towards the students' academic level and are long enough to keep them interested without getting bored. My students were talking about the activities for weeks afterward."

- Kindergarten Teacher, Hamilton-Wentworth District School Board after *Magnet Magic for Little Explorers*

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GRADE ONE

ANIMAL COVERINGS AND ADAPTATIONS

Earth & Space Systems | For Grades 1 & 2

What does raccoon fur feel like? What does a butterfly wing really look like? Why do porcupine quills stick so well? Explore some of nature's most unusual coverings including feathers, shells, scales, quills and fur. Investigate the insulating properties of a variety of animal coverings and discover some of the amazing adaptations animals use to survive their environment and seasonal changes.

ENERGY MAKES IT HAPPEN

Matter & Energy

Investigate the power of the sun as you explore the impact energy has on our daily lives. Make a bubble grow using heat from your body. See how a special bead can tell you if you should be wearing sunscreen. Discover what dinosaurs and a car have in common. Uncover your inner Picasso and create abstract paintings using solar power.



KITCHEN CHEMISTRY FOR CURIOUS KIDS

Special Interest | For Grades 1 & 2

As food scientists, savour the science behind baking bread. Find out why yeast rises. Investigate the chemistry behind baked goods as you blow up a balloon without using air. Do 'The Molecule Dance' to learn about the three states of matter and how solids, liquids and gases move. Participate in a taste test and dare to drink a chemical concoction.

NEVER SAY UGH TO A BUG

Life Systems | For Grades 1 & 2

There's much more than meets the eye in the world of invertebrates! To develop a new appreciation for bugs, your young entomologists will explore life cycles and behaviours of insects like bees, beetles, and more! Examine a variety of specimens to discover the benefit and true beauty of small creatures.

STRUCTURES: UNDER CONSTRUCTION

Structures & Mechanisms

As junior engineers, students will participate in activities that will help them understand how various materials and fasteners are used in the real world. Through the use of shapes and various materials, they will design and test the strength and stability of different structures. The final challenge: work as a team to build a structure capable of supporting a person.



Young scientists develop critical thinking, problem-solving, teamwork and other 21st century skills

GRADE TWO

ANIMAL COVERINGS AND ADAPTATIONS

Earth & Space Systems | For Grades 1 & 2

What does raccoon fur feel like? What does a butterfly wing really look like? Why do porcupine quills stick so well? Explore some of nature's most unusual coverings including feathers, shells, scales, quills and fur. Investigate the insulating properties of a variety of animal coverings and discover some of the amazing adaptations animals use to survive their environment and seasonal changes.

LOOKING AT LIQUIDS

Matter & Energy

Marvel as you explore the three states of matter, change a liquid to a solid and then eat it. Discover why one ball floats while another sinks and how changing shapes can effect buoyancy. Explore how different states of matter interact while investigating solubility and take up the challenge to produce the world's biggest bubble.

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MATH: IT COUNTS!

Mathematics | For Grades 2 & 3

Manage a bank account and earn money while learning about place value, currency and Venn diagrams. Practice telling time on digital and analogue clocks. Explore fractions in a classroom play. Try to trick your teacher as you reorganize yourselves by a mystery attribute. Become a banker, a storekeeper and a shopper as you add money, make change and calculate your spending power.

LET IT FLOW: AIR AND WATER

Earth & Space Systems

Discover the properties of air and water and the need to protect these valuable resources. Learn that air has weight, takes up space and can be used to save an accident victim. Watch it rain in your classroom. Uncover the hidden power in a water wheel and investigate the impact of sail size on a wind-powered vehicle.

MOVE IT!

Structures & Mechanisms

As masters of all that move, discover how simple machines make work easier. Motor along as you construct your own car while exploring wheels and axles. Go fishing to experiment with levers. Investigate pulleys to discover how they can lift heavy objects and change the direction of things. Make your own screw and drive a car to learn about inclined planes.



GRADE THREE

FORCE, OF COURSE!

Matter & Energy

Step into the physics lab to investigate friction, gravity, magnetic and electrostatic force. Learn how a volcano erupts and how the vortex of a tornado can uproot trees. Use a catapult to investigate how force affects a projectile, and experiment with both marbles and magnets to see if they can defy gravity. Engineer a crash to test the effectiveness of seat belts.

PLANTS DO AMAZING THINGS

Life Systems

Sow the seeds of discovery. Join this botanical adventure and explore how a plant breathes, grows and stores its food. Examine leaf characteristics, be amazed by plant adaptations and make your own recycled paper. Discover some of the extraordinary products made from plants.



SOIL: IT'S TOO IMPORTANT TO BE TREATED LIKE DIRT!

Earth & Space Systems

As a pedologist, get dirty with soil types. Discover that soil is composed of earth materials and decaying organisms. Race water through soil types to test water-holding capacity. Explore which nutrient makes soil blush. Burrow through soil to explore texture. Investigate erosion, build a soil profile, and learn about decomposers by making friends with some earthy creatures.

MATH: IT COUNTS!

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Manage a bank account and earn money while learning about place value, currency and Venn diagrams. Practice telling time on digital and analogue clocks. Explore fractions in a classroom play. Try to trick your teacher as you reorganize yourselves by a mystery attribute. Become a banker, a storekeeper and a shopper as you add money, make change and calculate your spending power.

STRUCTURES: STABLE AND STRONG

Structures & Mechanisms

Our world is full of structures of various strengths, designs and functions. Discover how suspension, truss and arch bridges interact with compression and tension. See how design can increase a structure's strength. Become a structure and discover how positions affect stability and strength. Use your engineering skills to build a bridge that can support "Big Jim" the bulldozer.

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GRADE FOUR

ADVENTURES IN THE BONE ZONE

Special Interest | For Grades 4 - 7

Delve into the diet and digestion of an owl as you discover what they eat for breakfast. Join this ecological adventure and dissect an owl pellet, use magnifying glasses to sort and identify bones and assemble a rodent skeleton. Examine a variety of mammalian skulls to determine species and explore similarities and differences between herbivores and carnivores.



DON'T TAKE ROCKS FOR GRANITE

Earth & Space Systems

Become a junior geologist and dig into the concepts of the rock cycle and modern mining. Identify a mystery mineral and explore how we use mined materials every day. Feel rocks from inside a volcano, metamorphose a rock in your hands and make a rock from plants and sea shells.

GEARING UP: FUN WITH PULLEYS AND GEARS

Structures & Mechanisms

Step into the physics lab and learn how pulleys and gears change force. Build pulley systems, design and construct a gear train, and explore how to change the direction of an applied force. Investigate gears that make household items move. Discover how to move something bigger than you.

LIGHT UP YOUR LIFE

Matter & Energy

How can you see around corners and over walls? Join us on an optical adventure as we investigate this and many other questions about the properties of light. Light up body parts in a hunt for translucent objects. Turn your classroom into a colourful disco and learn about the visible spectrum. Bounce and bend light to investigate reflection, refraction and fiber optics. Explore further with optical illusions, binoculars, kaleidoscopes, periscopes and magnifiers.

SOUND IS MUSIC TO MY EARS

Matter & Energy

Discover the science of sound as musical maestros. Explore sound waves and learn how sound makes your desk hum. Play boomwackers to explore factors affecting pitch. Create a laughing chicken to investigate amplification. Discover how the human ear detects sounds, guess the decibel level of a jet engine and learn how to protect your ears.

GRADE FIVE

ADVENTURES IN THE BONE ZONE

Special Interest | For Grades 4 - 7

Delve into the diet and digestion of an owl as you discover what they eat for breakfast. Join this ecological adventure and dissect an owl pellet, use magnifying glasses to sort and identify bones and assemble a rodent skeleton. Examine a variety of mammalian skulls to determine species and explore similarities and differences between herbivores and carnivores.



BODY WORKS

Life Systems

Explore the human body to learn how your organ systems work together. Learn about the skeletal system, view X-rays and identify bones in your body. Use a stethoscope to explore your cardiovascular system. Test your nervous system, build a urinary system to see how it functions, and follow the pathway food takes through your digestive system.

CONSERVE YOUR ENERGY

Earth & Space Systems

Embrace energy conservation by discovering where energy comes from, its different forms and how it is transferred and transformed. Identify energy stored in household objects, investigate how to launch a ping pong ball into space and discover how the energy in your body can power wind-up toys. Investigate insulation and learn how to turn heat loss into saved money. Explore the use of solar panels and use one to shed some light on the situation.

MAY THE FORCE BE WITH YOU

Structures & Mechanisms

Join our engineering team to learn how structures resist the forces acting on them. Participate in a potato masher relay race to examine balanced forces. Explore which forces are important in designing and building a structure. Investigate centre of gravity and learn its importance in structural design. Take on the challenge of designing, building and testing a free-standing structure.

WHAT IN THE WORLD IS MATTER?

Matter & Energy

Explore solids, liquids, gases and changes in state as detectives in the mystery of matter. Find out the difference between physical and chemical changes by testing if all plastics are equal. Participate in an evaporation race and carry out some cool chemistry in a Ziploc bag. Identify a mystery compound using chemical intuition and experimentation in this chemical caper.

GRADE SIX

ADVENTURES IN THE BONE ZONE

Special Interest | For Grades 4 - 7

Delve into the diet and digestion of an owl as you discover what they eat for breakfast. Join this ecological adventure and dissect an owl pellet, use magnifying glasses to sort and identify bones and assemble a rodent skeleton. Examine a variety of mammalian skulls to determine species and explore similarities and differences between herbivores and carnivores.

AIR AND FLIGHT

Structures & Mechanisms

Soar as you explore the science behind powered and non-powered flight. Levitate a ping pong ball using the properties of air and principles of flight and discover the best wing design for liftoff and the correct mechanics of propeller construction. Build your own plane and become an aviator to investigate factors affecting the direction and speed of flight.

CLASSY CRITTERS

Life Systems

Discover the 'Tree of Life' while working as a taxonomist. Create order from the vast diversity of living things using the Linnaean classification system. Examine the microscopic world of protists and monerans and match macroscopic specimens by uncovering similarities and differences. Compare important connections between species to understand why a classification system from 1735 still works today.

ELECTRICITY: GET CHARGED

Matter & Energy

Step into the physics lab and build a three-cent battery. Explore the nature of electricity and investigate how static electricity makes objects move. Design and build circuits. Test conductors, insulators and electromagnets. Put it all together to learn how a simple motor works.

GRADE SEVEN

ADVENTURES IN THE BONE ZONE

Special Interest | For Grades 4 - 7

Delve into the diet and digestion of an owl as you discover what they eat for breakfast. Join this ecological adventure and dissect an owl pellet, use magnifying glasses to sort and identify bones and assemble a rodent skeleton. Examine a variety of mammalian skulls to determine species and explore similarities and differences between herbivores and carnivores.

ENGINEERING CHALLENGES

Structures & Mechanisms

Discover the secrets of structural strength and stability. Design and build a functioning cantilever able to withstand a substantial load. Investigate how to fortify beam, truss, arch and suspension bridges. Join a class-wide challenge to build a truss bridge resistant to static and dynamic loads and internal forces using only newspaper and masking tape.

HOT STUFF

Earth & Space Systems

Join our Research and Development team at the 'Scientists in School Toy Company'. Challenge yourself to discover the secret workings behind a candle-powered putt-putt boat. Analyze how conduction, convection and radiation work together to propel these boats. Investigate the properties of matter, how the particle theory explains changes in state, and how energy transformations keep things moving.

MATH IS MY BUSINESS

Mathematics | For Grades 7 & 8

Become a financial wizard. Create a bank account and earn money as you learn about probability and percentages. Build a dream team for the hockey or basketball playoffs, calculate cap space and the probability of losing players to injuries. Invest to build low, medium and high-risk equity. Will you earn your first million or break the bank?

GRADE EIGHT

CELL EXPLORERS: INVESTIGATING CELL STRUCTURE AND FUNCTION

Life Systems

Become a cell biologist and examine plant and animal cells using microscopes and a videoscope. Examine animal and human cells to determine their structure. Make wet mounts of plant cells and compare to animal cells. Get absorbed in osmosis and explore pond water samples for living organisms.

FLUID POWER

Matter & Energy

Explore fluids and their application in mechanical systems. Study density to determine the composition of mystery cubes. Investigate the relative density of a variety of liquids. Race liquids to explore viscosity. Move a load with dump trucks to compare hydraulic and pneumatic systems. Build and operate models of hydraulic equipment including a robotic arm.

GROUNDWATER INVESTIGATIONS

Earth & Space Systems

Learn hands-on how to be a steward of our water systems. Explore groundwater processes and how this valuable resource moves through the environment. Test for pollutants and discover their possible sources. Evaluate well-tap studies and examine a localized watershed area to choose your next home.

MATH IS MY BUSINESS

Mathematics | For Grades 7 & 8

Become a financial wizard. Create a bank account and earn money as you learn about probability and percentages. Build a dream team for the hockey or basketball playoffs, calculate cap space and the probability of losing players to injuries. Invest to build low, medium and high-risk equity. Will you earn your first million or break the bank?

2016-17 Kidz Lab Mascot Challenge: Create A Brand New Mascot To Represent Scientists In School™!

Hey kids, it's time to get creative! Our beloved mascot, Mr. Scientist, is retiring and we need a NEW Kidz Lab Challenge mascot to take his place! This new mascot may be featured on our website, social media, and other communications materials, and the winner will receive some fantastic prizes.

Download the entry package at: scientistsinschool.ca/kidz-lab.php



**SCIENTISTS
IN SCHOOL**

Scientists in School™ is a leading Canadian science charity dedicated to sparking children's interest in science, technology, engineering, math, and the environment through hands-on discovery. Our mission is to ignite scientific curiosity in children so that they question intelligently; learn through discovery; connect scientific knowledge to their world; are excited about science, technology, engineering and math; and have their interest in careers in those fields piqued.

Scientists in School™

P.O. Box 660, Fonthill, Ontario. L0S 1E0

Tel/Fax: 905.892.9146

sco@scientistsinschool.ca

scientistsinschool.ca

STEM EDUCATION THROUGH PARTNERSHIP

Scientists in School relies upon the generous support of partners to subsidize the cost of workshops for all schools. Thank you to all of our partners.

CATALYST LEVEL

Natural Sciences and Engineering Research Council | TD Friends of the Environment Foundation

INNOVATION LEVEL

Cameco | RBC Foundation

IMAGINATION LEVEL

Amgen Canada | Amgen Foundation | CST Inspired Minds Learning Project | Gay Lea Foundation | Google Canada
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Ontario Power Generation | Superior Glove Works Ltd. | TELUS | The Calgary Foundation

DISCOVERY LEVEL

2016 Pickering Mayor's Gala | Celestica | Community Foundation of Ottawa
Consulting Engineers of Ontario | Hamilton Community Foundation
Isherwood Associates | MilliporeSigma | The Maurice Price Foundation

EXPLORATION LEVEL

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