SCHOOL PROGRAMS 2019–2020

PRESCHOOL TO SECONDARY

CANADA SCIENCE AND TECHNOLOGY MUSEUM

IngeniumCanada.org/schools

Canada

Curriculum Connections

School programs at the Canada Science and Technology Museum are designed to meet many of your learning objectives for students from Kindergarten through Grade 12 (ON)/Preschool through Secondary Cycle 2 (QC), stimulating wonder through hands-on experiences and open-ended questions. Examining how science and technology affect society and the environment, these programs offer students valuable opportunities to explore, discover, and appreciate scientific achievement from a Canadian perspective.

Activities, videos and other educational resources that complement these programs are available online at IngeniumCanada.org/educational-programs.

FREE preview! Teachers are welcome to visit the museum free of charge by presenting proof of their teaching status.

Ontario

	Belonging and Contributing, Self-Regulation and Well-Being, Demonstrating Literacy and Mathematics Behaviours, Problem Solving and Innovating
Kindergarten	A Trip Around the Sun

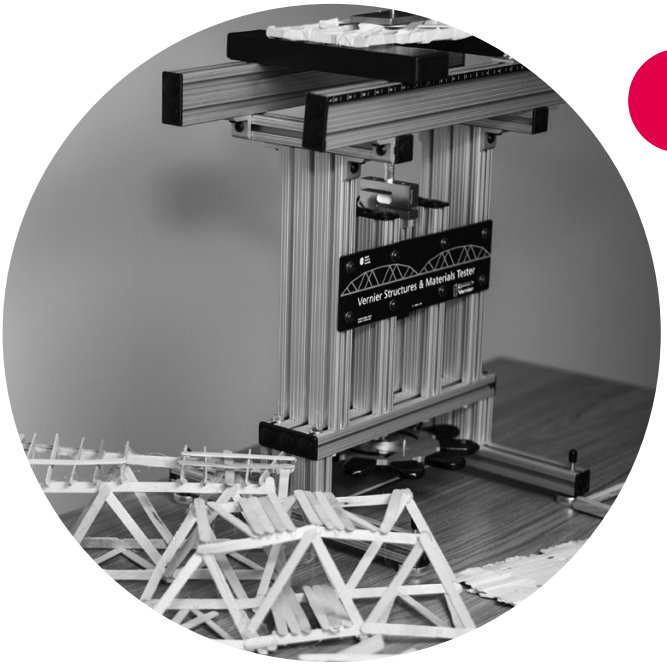
	Science and Technology			
	Understanding Life Systems	**Understanding Structures and Mechanisms**	**Understanding Matter and Energy**	**Understanding Earth and Space Systems**
Grade 1			Everyday Energy	A Trip Around the Sun
2		Simple Machines	**NEW!** Liquids and Solids	
3		**NEW!** Stable Structures	Forces in Action	
4		Pulleys and Gears		
5		Bridge Builders Chain Reaction		
6	Idea to Prototype Ocean Explorers	Chain Reaction	Electri-city	
7	Idea to Prototype Ocean Explorers	Bridge Builders Chain Reaction		
8		Chain Reaction Idea to Prototype		**NEW!** Water Systems

	Science				Technology
	Physics	**Biology**	**Environmental Science**	**Scientific Investigation Skills and Career Exploration**	
9	Electri-city	**NEW!** Water Systems		Idea to Prototype Chain Reaction	Idea to Prototype
10	Light Paths			Idea to Prototype Chain Reaction	Idea to Prototype
11	Chain Reaction		Idea to Prototype		
12	Chain Reaction		Idea to Prototype		

Quebec

Kindergarten

	Competency 5 — To construct his/her understanding of the world
Kindergarten	A Trip Around the Sun



Elementary Cycles 1 to 3

	Science and Technology		
	Material World	**Earth and Space**	**Living Things**
Cycle 1	**NEW!** Liquids and Solids	A Trip Around the Sun	
Cycle 2	Everyday Energy Forces in Action **NEW!** Liquids and Solids Pulleys and Gears Simple Machines **NEW!** Stable Structures	Everyday Energy	
Cycle 3	Bridge Builders Chain Reaction Electri-city		Ocean Explorers

Secondary Cycles 1 and 2

	Science and Technology		
	Material World	**Earth and Space**	**Living Things**
Cycle 1	Bridge Builders Chain Reaction Idea to Prototype		Ocean Explorers **NEW!** Water Systems
Cycle 2	Chain Reaction Electri-city Idea to Prototype Light Paths		**NEW!** Water Systems

School Program Descriptions

School Program Descriptions include all suitable grade levels, however, educators should cross-reference the Curriculum Connections Chart to verify the direct curriculum link (see pages 2-5).

A Trip Around the Sun

Kindergarten and Grade 1 / Preschool and Elementary Cycle 1
September through May
Duration: 60 minutes
$9 per student, max 30 students

What is our primary source of heat and light? How do the daily and seasonal cycles of the Earth affect everyday life? Students will answer these questions and more with a trip to the museum's inflatable planetarium. They will discover the technologies that allow Canadians to enjoy our seasons. They will also be introduced to the concepts of heat, light, day, and night, as they explore the changing seasons.

Everyday Energy

Grades 1 to 3 / Elementary Cycles 1 and 2
September through May
Duration: 60 minutes
$9 per student, max 30 students

This program allows students to observe how their own energy can be converted into movement. They will also investigate how various forms of energy can be used to power everyday devices. As a hands-on case study, students explore the effect of a dam's height, and observe how energy from falling water can be converted into the energy to light up an LED bulb.

NEW! Liquids and Solids

Grades 1 to 3 / Elementary Cycles 1 and 2
September through May
Duration: 60 minutes
$9 per student, max 30 students

This program invites students to examine the properties of materials through an exploration of liquids and solids. They will investigate the differences between the three states of matter, and will learn about how buoyancy changes in response to liquids with different densities. Armed with this new knowledge, they will be challenged to build a stable and buoyant structure that will be tested to see how much weight it can support.

Simple Machines

Grades 1 to 3 / Elementary Cycles 1 and 2
September through May
Duration: 60 minutes
$9 per student, max 30 students

How did the Ancient Egyptians move massive stone blocks across the desert? As this program demonstrates, they did it all with simple machines. Students will be challenged to move a heavy object using wheels and axles, ramps and pulleys. They will also have to decide where to place a fulcrum in order to perfectly balance two loads. Finally, they will experiment with creative ways of moving their heavy load, using as many different simple machines as possible.

NEW! Stable Structures

Grades 2 and 3 / Elementary Cycles 1 and 2
September through May
Duration: 60 minutes
$9 per student, max 30 students

Through hands-on activities, students will become junior engineers as they explore the characteristics of strong and stable structures. Using their problem-solving skills, they will investigate various types of bridges to see how shape and centre of gravity affect strength and stability. Finally, they will be challenged to use Kapla blocks to build a tower as tall as our model CN Tower, and to test whether it has the stability to support a heavy load.

Forces in Action

Grades 2 and 3 / Elementary Cycles 1 and 2
September through May
Duration: 60 minutes
$9 per student, max 30 students

What makes things move? What makes them stop moving? In this program, students will investigate a variety of forces—and put them to work—as they determine the best way to make cars race down a track. They will also observe digital graphing tools in use to measure the amount of force required to overcome friction on different surfaces.

Pulleys and Gears

Grades 4 to 6 / Elementary Cycles 2 and 3
September through May
Duration: 75 minutes
$9 per student, max 30 students

This program introduces students to the power of simple machines, and how we use pulleys and gears in our everyday lives. They will experiment with pulley systems to discover how they help with tasks such as lifting heavy objects. Students will then investigate how gears can work together to increase the speed or torque of a system, or to change the direction of movement.

Bridge Builders

Grades 5 to 7 / Elementary Cycle 3 and Secondary Cycle 1
September through May
Duration: 75 minutes
$9 per student, max 30 students

Teach students some basic engineering principles through this entertaining hands-on exploration. In this program, students become budding engineers as they design a bridge able to withstand the physical forces acting upon it. They will discover the properties of materials, as well as how these materials respond to forces when they are arranged in various configurations. Working together in teams, students will use their newfound knowledge to design and build a bridge prototype—just like a professional engineer! The program concludes with the testing of each bridge in our bridge-crusher to see how it works in terms of strength and weight.

Electri-city

Grades 5 and 6 / Elementary Cycle 3
September through May
Duration: 75 minutes
$9 per student, max 30 students

Discover how our houses are wired, allowing us to control various devices independently in different rooms. Through various hands-on electricity experiments, students will explore electrically conductive and insulating materials, and will learn the parts of an electrical circuit. In addition, they will discover the differences between series and parallel circuits. As they wire our miniature houses, students will observe as various electrical devices (i.e., a light bulb, fan, doorbell, etc.) transform electrical energy into another form of energy.

Ocean Explorers

Grades 6 and 7 / Elementary Cycle 3 and Secondary Cycle 1
September through May
Duration: 75 minutes
$9 per student, max 30 students

What lies deep beneath the ocean's surface? This program examines the different technologies used to study and explore the mysterious world that takes up almost 75 per cent of the Earth's surface. Using virtual reality technology, your students will dive with whales and discover the ocean depths. Students will learn about ocean sounds and North Atlantic Right Whales using an iPad, rove the ocean floor using Ozobots, and learn to classify marine animals.

NEW! Water Systems

Starting January 2020

Grades 8 and 9 / Secondary Cycles 1 and 2
January through May
Duration: 75 minutes
$9 per student, max 30 students

This program will help students gain a better understanding of Earth's water systems, as they investigate the factors that affect local water quality, and discover their own important role in caring for this resource. They will tap into their technological problem-solving skills to design and build a water-filtration device with everyday materials. Using microscopes and other tools, they will then evaluate the physical and chemical characteristics of their water samples to determine how well their filtration design works.

Electri-city

Grade 9 / Secondary Cycle 2
September through May
Duration: 75 minutes
$9 per student, max 30 students

Through exploration with circuit blocks, students will design and build series and parallel circuits, including the addition of switches and various devices. They will also learn to assess the differences in these circuits, and draw circuit diagrams. Students will then use multimeters to explore how voltage is affected when additional loads are added in different types of circuits. As they wire miniature houses, they will experiment with various electrical devices (i.e., a light bulb, fan, and doorbell) and have an opportunity to measure electrical current, potential difference, and resistance at various points in their circuits.

Light Paths

Grade 10 / Secondary Cycle 2
September through May
Duration: 90 minutes
$9 per student, max 30 students

In this program, students will explore the phenomena of light and geometric optics, including reflection, refraction, diffusion, focus, the convergence and divergence of light, the transmission of light, and shadows. In groups, they will experiment with various tools and materials to create a complex path for a beam of light. They will also work with other groups to build an optical chain reaction that passes beams of light from one group's apparatus to another.

Chain Reaction: A Series of Astonishing Events

Grades 5 to 12 / Elementary Cycle 3 and Secondary Cycles 1 and 2
September through June
Duration: 90 to 120 minutes
$10 per student, max 30 students

This program invites students to create a complex chain-reaction machine, using familiar materials in unusual ways. They will work in small teams as they experiment with the transfer of energy. Each team will then connect their section of the mechanism to other sections, creating an interconnected apparatus. This educational and playful workshop encourages critical thinking, collaboration, resiliency, and communication skills.

Idea to Prototype

Grades 6 to 12 / Elementary Cycle 3 and Secondary Cycles 1 and 2
September through June
Duration: 90 to 120 minutes
$10 per student, max 30 students

In this program, students will explore solutions to challenges surrounding climate change, sustainability, architecture, engineering, and other United Nations Sustainable Development Goals. Following a tactile brainstorming exercise that focuses on generating ideas and prototyping, they will engage in a series of scientific investigations, followed by a presentation of their creations to the group. This playful educational session has been specifically designed to develop students' critical thinking and communication skills. Workshop tasks encourage them to be collaborative, resilient and goal oriented—while also testing their innovation and creativity.

Summer Fun Days

Kindergarten to grade 8 /
Preschool to Secondary Cycle 1
June 1-19, 2020
Duration: Two 40-minute workshops
$9 per student, max 30 students

End your school year on a high note at the museum, with a range of fun activities and dynamic presentations. Details and registration for Summer Fun Days will be available in January 2020.

Self-guided Tours

Suitable for all grade levels
Year-round
$9 per student, max 30 students

Self-guided tours are an ideal way to chart your own course through the exhibitions, as you and your students explore the museum's superb collection at your own pace. Discover Canada's contributions to science and technology, along with exciting stage demos and the museum's Exploratek studio!

Coming soon

Engage your students with curriculum-linked challenges related to the museum's exhibits by downloading Museum Mission Activity Booklets from our website:

https://ingeniumcanada.org/scitech/education/education-self-guided-school-visit

General Information

School Programs are available weekdays from September 17, 2019 through May 28, 2020, and Summer Fun Days are available weekdays from June 1-19, 2020, all between the hours of 9:30 a.m. and 5 p.m. The museum is closed on Mondays from September through April. Some programs can be shortened to suit your requirements. All of the museum's educators are experts in adjusting the content to the needs of your class.

Reserving your visit

These programs are popular, and space is limited. Please be sure to book your visit well in advance. We recommend scheduling visits at least one month ahead of time.

There are two ways to reserve a program: School booking requests can be made using our online form. You can also connect directly with our Customer Relations team.

Email: contact@IngeniumCanada.org

Phone: **613-991-3053** or **1-866-442-4416**

Confirmation of your scheduled program will be sent to you via e-mail.

Free visit preview

Teachers are welcome to visit the museum free of charge by presenting proof of their teaching status.

Planning your visit

The following minimum ratios for adult supervision of students are **mandatory** when visiting the museum.

Level	Student-Adult Ratio
Kindergarten to Grade 8 Preschool to Secondary Cycle 1	10 : 1
Grades 9 to 12 Secondary Cycle 2	15 : 1

During these programs, museum educators will encourage teachers and accompanying adults to participate and assist. Proper supervision during free time is also essential to creating a safe and fun atmosphere at the museum. Teachers and supervisors are expected to remain with their students at all times.

Adult chaperones are included in the group price, at a maximum ratio of one per four students for elementary groups, or one per six students for secondary groups. If you wish to include additional adults, they will be charged admission at the group rate. The museum reserves the right to limit the number of extra accompanying adults.

Vehicle parking fees: $3 per hour, $8 daily maximum for other vehicles (same day only). Due to neighboring construction, bus parking is limited.

Accessibility

The museum is committed to providing an accessible environment. Please let us know if your group has any special needs upon booking, and we will be happy to discuss specific accommodations.

How to find the museum

The Canada Science and Technology Museum is located at 1867 St. Laurent Boulevard in Ottawa.