

**SCIENCENORTH**  **CA**  
/SCHOOLS



**NICOLE CHIASSON**  
Director of Education  
and Northern Programs  
chiasson@sciencenorth.ca  
705.522.3701 ext. 375



**SARAH CHISNELL**  
Senior Scientist - Education  
chisnell@sciencenorth.ca  
705.522.3701 ext. 317

## WELCOME BACK TO SCIENCE NORTH FOR THE 2019-2020 SCHOOL YEAR!

Every day at Science North, we look forward to learning, teaching, playing, and connecting with the science that impacts our lives. Having the opportunity to involve your students in science—and seeing the light in their eyes when they get inspired by an “aha!” moment—only makes it better.

Science education allows us to link literacy, numeracy and scientific skills for well-rounded, multi-disciplinary programs. Science North is dedicated to building the crucial skills that your students will need to become excellent learners, enabling them to excel in the pursuit of any field of study.

Our school programs allow students to practice their problem-solving, inquiry and numeracy skills. We help give them the confidence to communicate, interact and connect with others in their community, making meaningful connections with the world they live in.

Through collaborative and hands-on learning, we provide the tools they need to explore, ask questions, and find answers. By exposing students to a breadth of experiences at Science North, we are challenging them to develop their abilities to think independently and critically about what they see around them. Our goal—to ignite the spark in students!

Our Bluecoat scientists are dedicated to developing and delivering cross-curricular school programs for 21st-century learners. Bring your students to Science North and Dynamic Earth and let us provide interactive and kinaesthetic learning that makes science, numeracy and literacy come alive.

We look forward to welcoming your class during the 2019-2020 school year!

# SCHOOL VISIT GUIDE



2019-2020



**GENERAL INFORMATION**

Admission Rates ..... 2  
 School Memberships ..... 2  
 Hours of Operation ..... 2  
 Important Information ..... 2  
 Just for Teachers! ..... 3  
 Educator Resources ..... 4  
 Booking Your Visit ..... 5  
 Meal Options ..... 6

**SCIENCE NORTH**

**KINDERGARTEN TO GRADE 12**

**CURRICULUM CONNECTIONS** ..... 7-8  
 School Program Descriptions ..... 9-12  
 Additional Educational Experiences ..... 13  
 Live Science Shows ..... 14  
 Special Events ..... 15  
 Secondary School Experiences ..... 16-17  
 SHSM Industry Certification ..... 18  
 Special Exhibition ..... 19  
 Multimedia Experiences - Object Theatres ..... 20  
 Planetarium ..... 21  
 Science North IMAX® Theatre ..... 22

**DYNAMIC EARTH**

**KINDERGARTEN TO GRADE 12**

**CURRICULUM CONNECTIONS** ..... 23-24  
 School Program Descriptions ..... 25-26  
 Secondary School Programs ..... 27  
 Special Events ..... 28  
 Additional Educational Experiences ..... 29  
 Special Exhibition ..... 30

**ADMISSION RATES**

	STUDENT		SUPERVISING ADULT		ADDITIONAL ADULT	
	MEMBER	NON-MEMBER	MEMBER	NON-MEMBER	MEMBER	NON-MEMBER
SCIENCE NORTH	FREE	\$11	FREE	FREE	\$11	\$11
DYNAMIC EARTH	FREE	\$11	FREE	FREE	\$11	\$11
IMAX® THEATRE	\$6	\$6	\$6	\$6	\$11	\$11
PLANETARIUM	\$3	\$5	\$3	\$5	\$8	\$8
IMAX & PLANETARIUM	\$8	\$10	\$8	\$10	\$18	\$18

Prices are subject to applicable taxes.

**WE RECOMMEND THE FOLLOWING STUDENT/SUPERVISOR RATIO:**

K to Grade 2 2:1      Grades 3 to 8 3:1      Grades 9 to 12 5:1

Supervising adults are admitted free of charge at the recommended ratio. Additional supervisors beyond the recommended ratio must pay admission. Supervisors are required to remain with their students at all times.

**SCHOOL MEMBERSHIPS      MEMBERSHIP RATES**

SCHOOL MEMBERSHIPS ARE A GREAT VALUE! PAY ONCE AND VISIT OFTEN DURING THE SCHOOL YEAR!\*

As a Science North member school, your school can benefit from unlimited weekday visits\* to Science North and Dynamic Earth\*\* from **September 4, 2019 to May 29, 2020**, which can include hands-on, curriculum-linked programming to complement your classroom lessons. Science North member schools are also exempt from deposit fees and receive savings on special school events held throughout the school year.

*\*Note: All visits must be booked one (1) week in advance. Book online at [sciencenorth.ca/school](http://sciencenorth.ca/school) \*\*Note: Dynamic Earth will be unavailable from September 23, 2019 to November 1, 2019.*

**Elementary:**

Each registered student\* in the school pays \$5.50, plus applicable taxes

**Secondary:**

School memberships may be purchased two ways: Each registered student\* in the school pays \$5.50, plus applicable taxes, OR Each registered student\* in an entire grade level pays \$5.50, plus applicable taxes

\* Schools with a student population of 60 students or less must pay a minimum of \$330, plus applicable taxes for a school membership.

**HOURS OF OPERATION**

**10 A.M. TO 4 P.M.**

SCIENCE NORTH      September 4, 2019 to June 26, 2020

DYNAMIC EARTH      September 4, 2019 to September 20, 2019  
 November 4, 2019 to June 26, 2020

DOES A 9 A.M. START TIME SUIT YOU BETTER? CONTACT OUR BOOKING AGENTS AND WE WILL ACCOMMODATE YOUR REQUEST.

**IMPORTANT INFORMATION PROGRAM LENGTH**

All educational experiences are booked in one-hour intervals. School programs are generally 50 minutes in length, with some exceptions. School programs are not offered on weekends, holidays or during the summer.



# JUST FOR TEACHERS!



## TEACHER WORKSHOPS

### Do you aspire to become a classroom science hero?

Science North can help! We have developed a series of dynamic teacher workshops that cover the Ontario Science and Technology Curriculum. Each workshop is designed to give teachers the confidence and resources they need to investigate and explore the science concepts involved. These workshops involve teachers in fun, hands-on activities that they can take directly to the classroom. All activities are easily reproduced for the classroom at little or no cost.

Workshops are three hours long and cost \$600 each, with a maximum capacity of 30 attendees. Looking for a one- or two-hour customized workshop or want us to come to you?

Contact Sarah Chisnell at 705.522.3701 ext. 317.

## GET A TEACHER ACCESS PASS\*

### TEACHERS VISIT FREE WITH A TEACHER ACCESS PASS!

Your valid Ontario College of Teachers card grants you a free Teachers Access Pass, giving you no charge admission to Science North and Dynamic Earth, during designated periods.

\* Visit [sciencenorth.ca/oct](http://sciencenorth.ca/oct) for more information and restrictions.

*\*Free admission benefit does not apply during select annual special events and times, including March Break, summer school break, Halloween at Dynamic Earth, Christmas school break, and New Year's Eve Family Fun Day at Science North.*

## GETTING THE LATEST NEWS ISN'T ROCKET SCIENCE!

Stay up to date on the world of science and technology! Simply sign up to receive Science-ational News!, our monthly electronic newsletter, to find out about upcoming school and family events at Science North. Visit [sciencenorth.ca/schools](http://sciencenorth.ca/schools) to sign up.



## Educator Resources

Do you want to do hands-on, innovative science with your students right in your own classroom? Our online lesson plans were designed with you and your students in mind. They are easy to find, simple to teach, and you won't need any elaborate equipment to do them!

### The comprehensive resources include:

- Lesson plans for Kindergarten to Grade 12 for every strand
- Ready to use worksheets, answer keys and assessment tools
- Instructional videos to help you feel more confident in the science classroom, with mini lessons from our Bluecoats
- Dynamic, energizing classroom videos

Wow your students with engaging science activities and experiments that meet the elementary and secondary Ontario Science and Technology curriculum.

Booking one of our hands-on school programs at Science North or Dynamic Earth? Check out the resources to see if there is a pre- or a post-activity that you can do to enhance and extend your students' learning.





## BOOKING YOUR VISIT

FIRST COME, FIRST SERVED.  
BOOK EARLY!

Book your visit online at [sciencenorth.ca/schools](http://sciencenorth.ca/schools), call one of our friendly booking agents between 8 a.m. and 4 p.m. weekdays at 705.523.4629, or email us at [schoolvisit@sciencenorth.ca](mailto:schoolvisit@sciencenorth.ca).

### WHAT YOUR VISIT INCLUDES

A class visit includes up to two hands-on school programs and up to two additional educational experiences, which include Object Theatres, live science shows (Science North only) or the Underground Tour (Dynamic Earth only).

### ADD ANY VALUE-PRICED ADDITIONAL ATTRACTION!

- An IMAX® film
- A digital Planetarium school program experience

You will receive acknowledgement of your tentative booking by email including a copy of your proposed itinerary and your invoice. However, confirmation of your visit will not be given until we have received and successfully processed your deposit (not applicable for member schools). Please note that there is a 48-hour turnaround for email confirmation to member schools.

### CHANGES

In an effort to give all schools equal access to booking spaces, we ask that you limit changes to your itinerary (the date of your visit or the selection of programs) to one.

**NOTE** More than one change will result in a \$25 administrative fee (plus applicable taxes) per change.

### CANCELLATIONS

The cancellation of your visit, including failing to attend a confirmed visit, will result in a \$25 administrative fee, plus applicable taxes, per booking, except in cases of severe weather.

### PAYMENT

A non-refundable deposit of \$100 per school group is required to confirm your booking. (Not applicable for member schools)

A non-refundable deposit of \$300 per Ultimate School Field Trip or the Sunset to Sunrise Camp-in experience is required to confirm your booking. Full payment is required upon arrival at Science North or Dynamic Earth. Please bring a cheque, VISA or MasterCard to pay the full amount of the invoice, less your deposit. Make cheque payable to Science North. Be sure to include your school's name, invoice number and visit date with your payment.

**ACCESSIBILITY ACCOMMODATIONS ARE AVAILABLE UPON REQUEST.**

### RULES

#### OF CONDUCT

Science North welcomes school groups along with the general public during operating hours. Please be respectful of others who may be enjoying the same experience as your group.

### BELONGINGS

Open-access coat racks are available. Please leave valuables at home. Science North is not responsible for lost or stolen belongings. All forgotten items found will be taken to the admission desk and held for a short period of time. Please call 705.523.4629 if you have lost an item.

### LOST CHILDREN

Students of all ages should stay with their supervisors. Lost children should approach a Bluecoat who will conduct a radio search to locate the group. If a supervisor realizes a student is missing, the supervisor must approach a Bluecoat with a description of the child.

## MEAL OPTIONS

### SCIENCE NORTH MEAL PACKAGES

#### LUNCH (tax incl.)

**Option 1** **Slice of pizza** pepperoni or cheese  
\$9 /person • Choice of fruit or small salad • 1% milk

**Option 2** **Grilled chicken sandwich**  
\$9 /person on whole grain bread  
• Fruit • Choice of juice or 1% milk  
• Individual cheese portion

**Option 3** **Build a Wrap Box**  
\$11 /person • Wrap (Choice of ham or turkey) with cheese, lettuce and tomato (mustard and mayo on the side)  
• Fruit • 1% milk • Granola bar

**Option 4** **Snack plate**  
\$11 /person • Cheese, crackers and cold cuts\*  
• Fruit • 1% milk • Granola bar  
\* Can substitute meat with veggies

#### DINNER (tax incl.)

**Option 1** **Grilled chicken breast**  
\$12 /person • Potato wedges or mashed • Rolls and butter, salad, choice of beverage and dessert

**Option 2** **Spaghetti and meatballs**  
\$12 /person • Rolls and butter, salad, choice of beverage and dessert

#### IMAX (tax incl.)

\$4 /person **Snack Package**  
• Small popcorn • Small pop

### DYNAMIC EARTH MEAL PACKAGE

**LUNCH** **One slice of pizza\***  
\$9 /person • Bag of chips  
• Beverage (300 ml)  
\* Each extra slice of pizza is \$2.25

YOUR GROUP WILL BE PROVIDED A RESERVED SEATING AREA FOR LUNCH.



Teachers eat lunch FREE!

One free educator lunch meal per 15 student lunches ordered for a school visit.



**NOTE**

Vegetarian and gluten-free options are available. Please request at time of booking.

Your pre-ordered lunch is prepared and delivered to your group in your reserved seating area.



KINDERGARTEN

Science & Technology	Move Like the Animals	Mathematics	Shape Up +	Health & Physical Activity	Ready, Set, Move	👁️
	Beautiful Butterflies					
	Sounds of the Human Body					
	The Buzz on Bees					
	Bee-bots					

These tables match Science North's educational programs with the Ontario Science and Technology Curriculum strands and topics for Kindergarten to Grade 8.

- Math Curriculum Program
- Additional Cost
- Live Science Show
- Multimedia Experience

	GRADE 1	GRADE 2	GRADE 3	GRADE 4
Life Systems	Needs and Characteristics of living things	Growth and Changes in Animals	Growth and Changes in Plants	Habitats & Communities
	Rhythms of the Human Body	Rhythms of the Human Body	Nature Exchange	Making Sense of Senses
	Bugging Out	Bugging Out	Bugging Out	Nature Exchange
	Plants are Everything	Winter Wildlife	Plants are Everything	Climate Conundrums
	The Buzz on Bees			Ocean Ecosystems +
	Winter Wildlife			Predators
				Under the Same Stars - Minwaadiziwin \$
Structures & Mechanisms	Materials, Objects & Everyday Structures	Movement	Strong & Stable Structures	Pulleys & Gears
		Pushing & Pulling +	Amazing Machines +	Amazing Machines +
				Balance & Motion +
				Pushing & Pulling +
				Fantastic Forces *
Matter & Energy	Energy in our Lives	Properties of liquids and solids	Forces Causing Movement	Light & Sound
	What if I...? *	Mix it Up +	Pushing & Pulling +	Light, Forces and Energy in Space \$
		What if I...? *	What if I...? *	
			Fantastic Forces *	
Earth & Space Systems	Daily & Seasonal Changes	Air and Water in the environment	Soils in the Environment	Rocks & Minerals
	Seasons -Will it Rain or Will it Snow? +	The Changing Climate Show 👁️	Climate Conundrums	Rocks, Stones and Gems
	Reasons for the Seasons \$			Nature Exchange
Other	Ready, Set, Move 👁️	Ready, Set, Move 👁️	Ready, Set, Move 👁️	Ready, Set, Move 👁️
	Lit Science *	Lit Science *	Lit Science *	Lit Science *

	GRADE 5	GRADE 6	GRADE 7	GRADE 8
Life Systems	Human Organ Systems	Biodiversity	Interactions in the Environment	Cells
	Human Organ Systems	Making Sense of Senses	Nature Exchange	Solve a Cellular Mystery
	Under the Same Stars - Minwaadiziwin \$	Nature Exchange	Warm and Cold-Blooded Animals	
		Ocean Ecosystems +	Under the Same Stars - Minwaadiziwin \$	
Structures & Mechanisms	Forces Acting on Structures & Mechanisms	Flight	Form and Function	Systems in Action
	Amazing Machines +	Prepare for Take-Off *	Devising Devices +	Devising Devices +
	Balance & Motion +		What is a Concussion? +	
	Fantastic Forces *			
Matter & Energy	Properties of and Changes in Matter	Electricity & Electrical Devices	Pure Substances and Mixtures	Fluids
		Let's Get Electric! +	Flow With It *	Flow With It *
				Devising Devices +
Earth & Space Systems	Conservation of Energy and Resources	Space	Heat in the Environment	Water Systems
	Climate Conundrums	Our Place in Space	HEATmosphere +	HEATmosphere +
	Let's Get Electric! +	Expore Space \$	Warm and Cold-Blooded Animals	Under the Same Stars - Minwaadiziwin \$
	The Changing Climate Show 👁️	Under the Same Stars - Minwaadiziwin \$	The Changing Climate Show 👁️	
Other	Ready, Set, Move 👁️	How to Create a Science Fair Project +	How to Create a Science Fair Project +	How to Create a Science Fair Project +
	Lit Science *	Ready, Set, Move 👁️	What is a Concussion? +	What is a Concussion? +
		Lit Science *	Ready, Set, Move 👁️	Ready, Set, Move 👁️



## KINDERGARTEN

### Move Like the Animals

In this active program, your students will love mimicking the behaviour of some of their favourite creatures. While interacting with live animals, students will learn about animal life cycles and how they move in their environments.

### Shape Up!

Shapes are the building blocks of the world around us. This program offers students the chance to investigate and compare two-dimensional shapes using hands-on tools and technology. They will experiment with these shapes, while identifying and creating colourful patterns.

### Beautiful Butterflies

Treat your students to a transformative experience with fun activities in the world of butterflies! From eggs to adults, students will observe butterflies' life cycles, behaviours and interactions within their environment, all amidst the many tropical butterflies at Science North's stunning F. Jean MacLeod Butterfly Gallery.

### Sounds of the Human Body

Hiccups, burps, and farts, oh my! Students will discover why the human body makes certain sounds by exploring the organs that make them. Listening with a specialized medical instrument and manipulating preserved organs, students will discover math within the science.

### Bee-Bots

Students will learn how honey bees communicate with the waggledance while programming a robotic honey bee. Students will also learn about the honey bee life cycle and how they change over their life span.

## KINDERGARTEN TO GRADE 1

### The Buzz on Bees

Students get to learn more about one of the insect world's most fascinating members: the bee! Students will discuss the needs of living things, focusing on plants and bees, participate in fun activities about pollination, and learn about the different roles each bee has and how the whole colony works together. They will come away with a better understanding of how they impact bees and their environment.

## GRADES 2 TO 4

### Pushing & Pulling

Find out how pulleys can give you superhuman strength. Using tools and technology, students will build and investigate different types of pulley systems and evaluate how pulleys affect the amount of force required to lift a load.



## GRADES 1 TO 3

### Plants are Everything

When it comes to sustaining life on Earth, plants are everything! Your students are invited to explore the critical role plants play, with activities that examine plant characteristics, life cycles, feeding, growth and reproduction.

### Winter Wildlife

We have warm clothing and furnaces to keep us warm all winter long, but how do animals survive the harsh winter? Whether migrating or hibernating, students will learn about the different strategies and adaptations animals use to weather the winter.

### Rhythms of the Human Body

From the funny to the strange, why does the human body make some of the sounds it does? Students will discover the reasons behind these sounds by exploring the organs that make them. They will use tools and manipulate preserved organs all while discovering the rhythms of the body.

### Bugging Out

Let's get up close and personal to all things creepy-crawly. Using live insects and interactive activities, students will delve into how different insects adapt to their environments. There will also be a focus on the human impact on natural environments and human's use of animals in daily life.

### Mix It Up!

In a series of hands-on activities, students will use scientific tools and methods to investigate the properties and interactions of various solids and liquids.

### Seasons: Will it Rain or Will It Snow?

Energy and the properties of liquids and solids are explored through the changing seasons. Students will learn how the Earth's tilt creates different seasons and explore the seasons through repeating patterns and numbers.







## GRADES 3 TO 5

### Amazing Machines

Join your students in hands-on activities that allow them to explore and create simple machines and related forces. Using the educational tool, RIGAMAJIG, and an assortment of other equipment, students will have the opportunity to challenge themselves, develop new skills, and problem-solve their own creations.

### Climate Conundrums

Temperatures are rising across the planet. Through hands-on learning, students will be introduced to the conundrum that is climate change and will experience the consequences of habitat loss from rising temperatures. They will have the chance to explore solutions to reduce carbon emissions.

## GRADES 4 TO 6

### Predators

In nature, there is nothing more thrilling than the hunt! Students will discover some of the adaptations that predators have developed to hunt and kill their prey through examining animal skulls and dissecting an owl pellet.

### Human Organ Systems

In this updated program, students investigate the structure and function of the respiratory and circulatory systems. Using hands-on science tools, they will identify the interrelationships between these systems and investigate how physical activity changes them.

### Making Sense of Senses

How do animals use sight, sound and smell to survive in the wild? Through hands-on experiments and interacting with live animals, students will learn about how animals thrive in their habitats and communities using special sensory adaptations. Students will also learn how energy moves through food chains and food webs.

### Ocean Ecosystems

Oceans make up 70% of the Earth's surface and their importance cannot be underestimated. Students will examine how humans are affecting ocean ecosystems by observing the relationships between fishing, economics, and species at risk.

### Balance & Motion

Using the key concepts of force, balance, symmetry and motion, students will build a frame structure that includes a pulley in order to complete a challenge.



## GRADES 5 TO 6

### Let's Get Electric!

In order to explore concepts of electrical energy and energy conservation, students will construct circuits using a variety of tools.

## GRADE 6

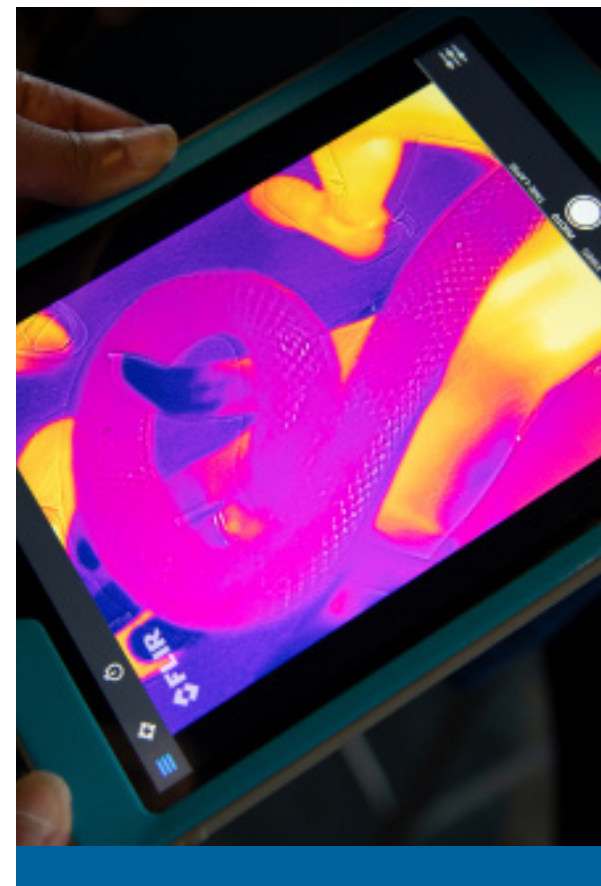
### Our Place in Space

From the Sun to Neptune, immersive activities will let your students discover how Earth fits into the solar system and cosmos. They will experiment with tools and techniques scientists use to learn about all the planets (and dwarf planets) in our solar system.

## GRADES 7 TO 8

### HEATmosphere

Through hands-on activities and illustrative comparisons with other planets, students will explore the Earth's climate system including inputs, outputs, and feedback loops involving heat and water.



### Solve a Cellular Mystery

A crime has occurred at Science North and we are looking for the best detectives to solve the case! Cellular evidence has been left behind at the crime scene. Students will take samples, create slides, and compare against pre-prepared slides to crack the case.

### Devising Devices

In this inventive program, students will build and test their own devices that operate on hydraulics and/or pneumatics to lift loads. They will work with real tools to compare properties of fluids to investigate other forces and factors that affect their device's performance.

### What is a Concussion?

What happens to a human brain when it is concussed? Students will manipulate a preserved brain to learn the effects of concussions. They will also try out concussion-simulation goggles and test helmet materials using an egg drop experiment.

### Warm & Cold-Blooded Animals

What is the difference between a cold-blooded and a warm-blooded animal? How do conduction, convection and radiation affect animals and the way they thermo-regulate? Students will experiment with different insulators and learn to use an infrared camera, while interacting with live animals in this hands-on program.



## ADDITIONAL EDUCATIONAL EXPERIENCES



**GRADES 3 TO 8**  
**90 MINUTES**

### Nature Exchange

Students gain an appreciation for plants, insects, rocks and minerals, and their role in the ecosystem by trading items found and collected from their backyard or abroad.



#### NOTE

Students must locate and acquire their items for trading before their visit to Science North.



**GRADES 4 TO 12**  
**2 HOURS**

### Rocks, Stones and Gems!

Lapidary is the art of forming, cutting and polishing stones and gems. From cabbing to faceting and etching, students learn about different lapidarist techniques. They will also find out why various rocks handle differently and why some are used for certain purposes.

**GRADES 6 TO 8**  
**90 MINUTES**

### How to Create a Science Fair Project

Want to create a science fair project that really wows the judges? Learn what steps are involved in completing a successful project, from choosing a great topic to designing and executing the experiment. Students will participate in several hands-on activities that illustrate the main steps of a scientific experiment and could be a jumping-off point for further investigation.



## DISCOVERY THEATRE

### LIVE SHOW



#### Lit Science

**GRADES 1 TO 6**

How does fire work and how do we use it safely? What tools do we need to use to make fire and extinguish it? This program will get your students fired up about fire, where they will learn about fire safety and some fun facts.

#### What if I...?

**GRADES 1 TO 3**

Energy is one of the most fascinating properties of matter. In this powerful program, your students will learn about energy and how it can be transferred and transformed by asking one important question: "What if I...?"

#### Fantastic Forces

**GRADES 3 TO 5**

Explore! Investigate! Move! Through exciting and inspiring demonstrations, your students will have the opportunity to play with and learn about the forces around them.

#### Prepare for Take-off

**GRADES 5 TO 6**

How does a 400,000 kg aircraft fly into the air!? Through awe-inspiring, gravity-defying demonstrations, your students will learn all about the physics of air and flight. Please fasten your seatbelt.

#### Flow with It

**GRADES 7 TO 8**

What are fluids? And what are they made of? With the help of our scientists' explosive demonstrations, students investigate the different properties of fluids and how they flow.

#### Chemistry 101

**GRADES 9 TO 12**

Experiment! Investigate! Discover! Students will be amazed at the elemental science that is chemistry. This show has it all: atoms, elements, periodicity, rates of reactions, and gases.



# SPECIAL EVENTS

## SPACE IS LIMITED

### GRADES 9 TO 12

#### The 9<sup>th</sup> Annual Science Coding Olympics at Science North November 6, 2019 (French) November 7, 2019 (English)

Science North is excited to offer an action-packed experience for secondary schools.

The 9th Annual Science Coding Olympics will provide the opportunity for teams of students from Grades 9 to 12 to experience science and coding challenges, competing against the clock.

Science Coding Olympics is a series of problem-solving events that provide hands-on learning and require students to apply their knowledge of science and coding in creative ways. There will be Intermediate (Grades 9 and 10) and Senior (Grades 11 and 12) divisions, with students competing in teams of four.

#### FIRST® LEGO® League Tournament Saturday December 14, 2019

All-day event! Register your team now for the 16<sup>th</sup> annual FIRST® LEGO® League tournament:

##### CITY SHAPER

What if you could build a better world? Where would you begin? Guided by adult Coaches, FIRST LEGO League teams research a real-world problem and are challenged to develop a solution. They also must design, build, program a robot using LEGO MINDSTORMS® technology, then compete on a table-top playing field.

For more information or to register, visit [sciencenorth.ca/schools](http://sciencenorth.ca/schools) or 705.522.3701 ext. 265



# SECONDARY SCHOOL EXPERIENCES

### SNC1D, SNC1P

#### It's Electrifying! 90 minutes

Let's get electric as your students explore the different aspects of electricity: properties of static and current electricity, sources of electricity, and the practical use of electricity in our daily lives. Hands-on activities will give your students a better understanding of static electricity and electrical circuits.



#### Spaced Out 50 minutes

Through engaging hands-on activities, students will explore the Big Bang theory and its implications on the structure and evolution of the universe, along with the characteristics and properties of the celestial objects visible in the night sky.

#### The Solar System and Beyond 90 minutes

What lies in outer space beyond our own backyard? Explore space as we travel through our solar system and beyond! We will view our place in space, and discover the history of the universe from the Big Bang to the present day. **This program is held in the Planetarium at no extra cost.**

**! NOTE:** This program can only be booked if you have booked Spaced Out the same day.

### SNC1D, SNC1P, SBI3U, SBI3C, SVN3M

#### Welcome to the Wetlands 150 minutes

The wetlands are home to some of the most fascinating creatures. Students will visit a wetland to learn about its importance to local and global biodiversity. Using scientific equipment (dip nets, microscopes, binoculars) to collect and observe wetland organisms, they will learn how to determine the quality of an aquatic ecosystem.



**! NOTE:** Students must bring their own rubber boots. This program is only available through September until the second week of October and from the first week of May until the end of the school year.

#### Reptiles at Risk 50 minutes

Turtles, lizards, and snakes, oh my! This exciting program offers students the chance to meet a variety of Ontario's at-risk reptiles and learn about factors that threaten them and their habitats, along with ways to help protect them.



## SNC1D, SNC1P, SNC2D, SNC2P, SBI3U, SBI3C

### Fish Physiology and Evolution 50 minutes

There are plenty of fish in the sea...and students will get a better understanding of them. Using real specimens, students examine the evolutionary history of fish by observing modern day samples. Students will gain an understanding of evolutionary processes using fish as visual and tangible examples.

## SNC2D, SNC2P

### Chemical Reactions 90 minutes

If your students love chemistry, this is the program for them! Students will have a hands-on opportunity to follow lab procedures while refining their skills. They will be able to take measurements while exploring exothermic, endothermic reactions, acids, bases and more!

### Mirror, Mirror 50 minutes

Time to reflect on mirrors and how they work. Students have the opportunity to investigate properties of light and geometric optics. In this program, students explore their powers of critical thinking through a series of inquiry-based challenges.

## SNC2D, SNC2P, SVN3M

### Climate Experiments 50 minutes

What determines our climate and how it changes? Students investigate natural and human factors that influence our climate and climate change, including the greenhouse effect and heat transfer through air and water.

## SBI4U

### Molecular Genetics 90 minutes

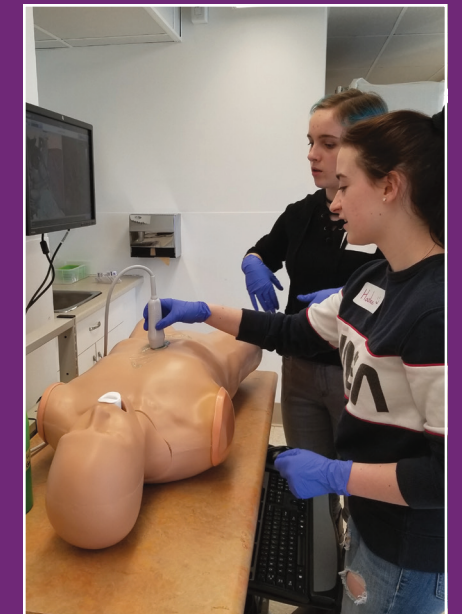
What do your genetics determine about who you are? Students will learn the history of genetics, explore how genes code for proteins, and even evaluate their own genome by examining some common physical traits. They will also learn how to use a gel electrophoresis apparatus to separate molecules similar to what is used by genomicists studying DNA.

### Neuroscience 50 minutes

Are we getting on your nerves? Students will explore the nervous system by examining a preserved brain and evaluating their own nervous systems through a series of tests, including two-point discrimination, reaction time and reflexes. Students will also be able to see an experiment where the action potential of one individual will be used to control another person's arm!



## SCIENCE NORTH 2019 – 2020 INDUSTRY CERTIFICATIONS



Science North now offers industry certifications for Specialist High Skill Major (SHSM) students. Choose from certifications offered throughout the school year. During each day-long SHSM program, students will earn two to three industry certificates in their field of study.

### CERTIFICATIONS AVAILABLE

- Compass/Map/GPS
- Radio Operator
- Watershed Management
- Species ID
- Environmental Awareness
- Habitat Restoration
- Plant ID
- Environmental Impacts
- Leadership
- Communication

### COST

\$48 per student, lunch included  
(plus applicable taxes)

### LOOKING FOR A PARTICULAR CERTIFICATE?

Contact  
Sarah Chisnell  
at 705.522.3701 ext. 317 or by email  
at [chisnell@sciencenorth.ca](mailto:chisnell@sciencenorth.ca)



★ BE AMAZED MAR. TO SEPT. 2020 ★

How have some of the world's most exceptional people made their way into the record books? At this special exhibition, visitors of all ages will learn about the science behind the Guinness Book of World Records, along with real science experiences and record-breaking challenges. Students will learn about amazing record breakers and learn more about themselves, as they are drawn in by inspirational stories and intriguing artifacts.

**Be amazed** by the fastest, longest, highest, and strongest! Learn the science behind these feats and use this knowledge to develop your skills.

**Be amazing** as you explore, focus, react, and endure! Challenge yourself, your friends, or your family to climb the leaderboard.

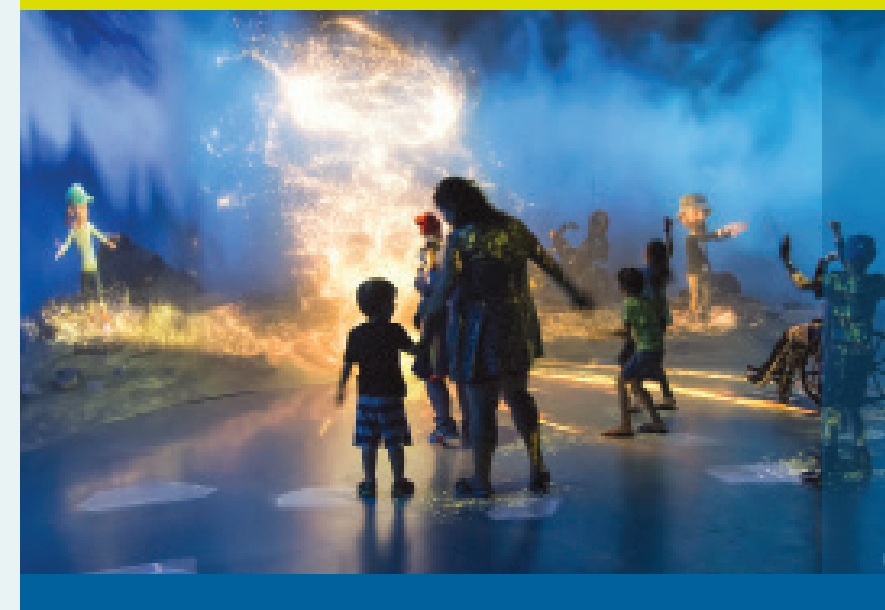
**Be officially amazing** and break a world record! Celebrate your unique talents and the knowledge that you are scientifically amazing.

## MULTIMEDIA EXPERIENCES OBJECT THEATRES

### GRADES 1 TO 12

#### Ready, Set, Move!

In this fully immersive and interactive theatre, your students will have to jump, dodge, and twist in order to help our heroine save her family from an ominous, dark fog. Take your class on a journey into the world of healthy living, where movement-sensing technology allows their own activity to contribute to the story. This experience will be complemented by Bluecoat-led movement activities in the BodyZone.



#### The Changing Climate Show

Don't let the wool get pulled over your eyes! Sheepy has enlisted the help of "Fleece-Net", a global network of informed sheep, to gather vital information about current climate situations worldwide. Together, they present a picture of our vulnerabilities while also highlighting innovative solutions that are being implemented around the world.

### GRADES 5 TO 12

#### Between the Stars

Journey deep into space and deep underground as we investigate the universe's greatest mystery: dark matter. Students will find out why scientists travel two kilometres underground to study a substance that makes up 80% of the universe, and what their discoveries could mean for our understanding of the cosmos. Along the way, students will learn about our solar system, galaxy, universe and Canada's best-kept scientific secret: a world-class physics lab right here in Sudbury!





# PLANETARIUM

Extend your educational experience into the stars! Starting times from 9 a.m.

By adding this value-priced, curriculum-linked attraction, your students will be immersed in the sciences of the universe. Led by our scientists, this high-tech, multimedia experience is designed to complement the space curriculum while sparking an interest in the world beyond our planet. Using high-quality imagery and audio, the Planetarium brings to life your students' journey through space.

PLANETARIUM FEE APPLIES.  
SPECIAL PRICE FOR MEMBER  
SCHOOLS. ALL PLANETARIUM  
PROGRAMS ARE 50 MINUTES  
IN LENGTH.

## Reasons for the Seasons

GRADES 1 TO 2

Investigate daily and seasonal changes by observation of the relationship between the Earth, Moon and Sun in an immersive full-dome environment. This presentation, geared to a younger audience, is mixed with music and lights.

## Light, Forces and Energy in Space

GRADES 3 TO 5

Learn what scientists know about the sun and space through the study of light and its properties. Discover how the force of gravity and kinetic energy govern the movement of planets through space.

## Explore Space

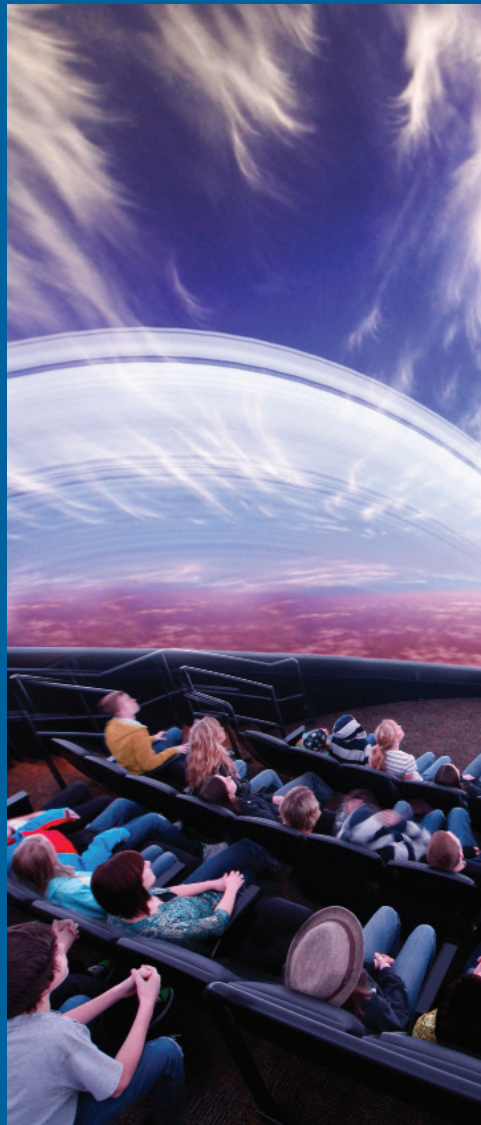
GRADE 6

In this fully immersive space experience, students will explore the solar system. They will learn about the history of space exploration, along with the mathematics and technology that make it all possible. They will also consider the costs and benefits of space exploration missions past, present and future!

## Under the Same Stars – Minwaadiziwin

GRADES 4 TO 8

The First People were scientists and innovators, carefully tracking and moving with the seasons and creating inventions that allowed them to survive in the northern forests of our country. With this close connection to the natural world, the Indigenous People of Canada developed a strong culture, rooted in respect for the environment. This special presentation aims to give students a chance to learn about the Indigenous worldview and sit at the fire with two people who are connected to the traditional ways.



## EXPERIENCE IT IN IMAX®

The Science North IMAX® Theatre is one of three in Canada to offer the world's most state-of-the-art cinema technology—IMAX® with Laser.

IMAX with Laser engages your senses, captivates your heart, and raises the science of cinema to the level of magic.

It offers the sharpest, brightest, clearest and most vivid digital images ever, combined with a whole new level of immersive audio. (Sound and light levels are adjustable upon request).

The Science North IMAX® Theatre now offers the best programming available, in both classic IMAX or IMAX 3D formats for documentaries and feature-length Hollywood films.

## FILM LIBRARY

Science North has a full library of films to choose from for morning time slots. Schools may also book regularly scheduled films in the afternoon public schedule.

- AMAZON ADVENTURE 3D\*
- A BEAUTIFUL PLANET 3D\*
- BACKYARD WILDERNESS 3D
- D DAY 3D\*
- GREAT BEAR RAINFOREST 3D
- JEAN-MICHEL COUSTEAU'S SECRET OCEAN 3D\*
- MEERKATS
- MYSTERIES OF CHINA
- OCEANS: OUR BLUE PLANET 3D
- SUPERPOWER DOGS 3D\*
- TINY GIANTS 3D
- TURTLE ODYSSEY 3D

*\*Films available in French*



IMAX® is a registered trademark of IMAX® corporation.

**BOOK YOUR VISIT NOW!** COST \$6 per student and supervising adult within the recommended ratio, \$11 per additional supervising adult (plus applicable taxes). Available weekday time slots for school bookings are 10 a.m. and 11 a.m. A minimum of 20 students is required for these showtimes.

## KINDERGARTEN

Science & Technology

Crater Maker! (30mins)  
Meet the Ozobots (30 mins)

These tables match Dynamic Earth's educational programs with the Ontario Science and Technology Curriculum strands and topics for Kindergarten to Grade 8.

 Multimedia Experience

	GRADE 1	GRADE 2	GRADE 3	GRADE 4	
Life Systems	Needs and Characteristics of living things Fresh Air Fables The Science of Soil	Growth and Changes in Animals Fresh Air Fables	Growth and Changes in Plants Fresh Air Fables The Science of Soil	Habitats & Communities The Power of the Sun	
	Structures & Mechanisms	Materials, Objects & Everyday Structures Underground Tour 	Movement	Strong & Stable Structures Underground Tour 	Pulleys & Gears
Matter & Energy		Energy in our Lives Wicked Weather	Properties of liquids and solids	Forces Causing Movement	Light & Sound
	Earth & Space Systems	Daily & Seasonal Changes Wicked Weather	Air and Water in the environment Wicked Weather	Soils in the Environment The Science of Soil Fresh Air Fables	Rocks & Minerals Mineral Madness Rock on! Nickel City Stories  Rocks to Riches  Underground Tour 
Social Studies		Canada & World Connections Nickel City Stories  Underground Tour 	Canada & World Connections Nickel City Stories  Underground Tour 	Canada & World Connections Nickel City Stories  Underground Tour 	Canada & World Connections Nickel City Stories  Underground Tour 

	GRADE 5	GRADE 6	GRADE 7	GRADE 8	
Life Systems	Human Organ Systems	Biodiversity	Interactions in the Environment	Cells	
	Structures & Mechanisms	Forces Acting on Structures and Mechanisms Underground Tour 	Flight	Form and Function Mining Design Underground Tour 	Systems in Action Mining Design Rocks to Riches  Underground Tour 
Matter & Energy		Properties of and Changes in Matter Brilliant Diamonds	Electricity and Electrical Devices Underground Tour  The Power of the Sun	Pure Substances and Mixtures Fantastic Fluids	Fluids Fantastic Fluids
		Earth & Space Systems	Conservation of Energy and Resources The Power of the Sun Mineral Madness Rock on!	Space Mineral Madness	Heat in the Environment Beat the Heat!
Social Studies	Heritage and Citizenship Nickel City Stories  Underground Tour 		Canada and World Connections/Heritage and Citizenship Nickel City Stories  Underground Tour 	History/Geography Nickel City Stories  Underground Tour 	History/Geography Nickel City Stories  Underground Tour 





## KINDERGARTEN

### NEW! Meet the Ozobots 30 minutes

Automation and robotics are at the forefront of new mining techniques. Your students will be introduced to coding and robotics using Ozobots. They will help students trace shapes and designs, and inspire learning through hands-on activities!

### Crater Maker! 30 minutes

1.85 billion years ago, a huge meteorite hit Earth and formed what we know as the Sudbury Impact Structure. Students get hands-on experience with real meteorites and learn how craters are formed. They will also get to explore what meteorites teach us about geology and outer space by creating their own impacts.

## GRADES 1 TO 3

### NEW! Wicked Weather

We know that air and water are needed to live, but they are also key factors in creating the weather we experience every day. Why and how are they constantly flowing and changing? From windstorms to rain clouds, students will explore both water and air cycles and how they work together to create the weather.

### Fresh-Air Fables

Put your students' imaginations to work! They will create their own mini-ecosystems using soil, miniature rocks and minerals, animals, plants and other resources. As their environment changes, they will craft a unique story about daily life in their habitats. Students consider how human impact and effects from climate change may alter their landscape, and ultimately discover how living things adapt.

### NEW! The Science of Soil

Soil is essential for plant life on Earth, which in turn feeds us, provides shelter for animals, and keeps our air clean. Your students will get their hands dirty while exploring the various colours of soil, its composition, and sorting soil by particle sizes. The end goal: understanding why soil is absolutely necessary for the planet.



## GRADES 4 TO 6

### NEW! The Power of the Sun

Energy from the sun is essential to all living things on this planet—and Canadians have come up with some pretty innovative ways to use its power! Your students can discover the benefits of using the sun's energy and even how it can help reduce our carbon footprint.

### NEW! Mineral Madness

Solve the mysteries of mineral identification! Minerals are used in our everyday products, from electronics to table salt. Students will learn the characteristics that make these minerals so useful and how to identify our most common minerals.

### Brilliant Diamonds

There is nothing on Earth like a diamond—it is both a dazzling, prized stone and the hardest natural material on the planet. Students will learn why diamonds are so valuable, how they are mined, and the processes that have shaped them.



## GRADES 7 TO 8

### NEW! Rock on!

Get ready to rock! This hands-on workshop lets students discover more about rocks, including putting a rock cycle together and learning how rocks are used in our everyday lives, from industry to art. Focusing on a common rock type, students will use their knowledge and creativity to produce their own piece of rock art.

### NEW! Beat the Heat

Heat is an essential part of Earth's processes. How is Earth's heat created and transmitted? Why does it get hotter the deeper we go underground? How can we safely dig deeper with all this heat? Students will explore these questions with an engaging hands-on activity and tour our Hydraulic Air Compressor to learn how miners can keep cool underground.

### Fantastic Fluids

We live in a world of water. From our atmosphere, oceans and core, we breathe, drink and use fluids every day. Students will learn how water works within our environments and all about its amazing properties by completing some very cool experiments.

### Mining Design

What do you need to make a mine successful? Well, to begin, you need a way to get machinery and people up and down through the mine! Students will explore various types of hoists and learn how they have evolved through time from early mine to present time. The second most important thing is clear communication. Students will experience how workers communicate with each other when they are metres upon metres underground.



# SECONDARY SCHOOL EXPERIENCES



## Sudbury's Green Story

50 minutes

Celebrate 40 years of greening Sudbury! In this program, students dive into our city's story, including its unique geology and how we progressed into a beautiful city. Learn about the meteor impact, the eventual mining influence on the landscape, and the greening efforts to restore our natural environment. Venture out on Dynamic Earth's property to take in unique sights and geological features (weather permitting).

## Subterranean Math

50 minutes

Mathematics goes underground in this program, where students use our mine as a part of unique workshop to determine unknown lengths, areas, volumes, heights and other surprises. They will learn techniques to quickly structure a mathematical estimation, judge the plausibility of their answers, and hone their abilities to precisely estimate a given quantity.



## A Career in Mining

90 minutes

Is a mining career in the future for some of your students? The skills required to locate, develop and operate a mine are all very different from each other. That's why the Mining Sector is associated with a multitude of career options. Each taking on a distinct role, students will work together to manage a mine site and turn it into a successful investment!

# SPECIAL EVENTS SPACE IS LIMITED

SPECIAL ALL-DAY PROGRAMS!

## Mining Bots

November 4 - 29, 2019

As technology advances, more mines are turning to remotely automated machinery to do the work underground while keeping the operator safely above ground. In this exciting program, your students will have the chance to become both miners and engineers putting their coding skills to the test with some challenges using robots!

Grades 4 to 6 **Dash and Dot**

Grades 7 to 8 **Spheros**

Presented by: 



## GRADES K TO 2

### Dino-Mite!

December 2 - 13, 2019

Nothing sparks the imagination of kids more than picturing a time when dinosaurs ruled Earth! Using fun, hands-on activities, students will put on their paleontologist hats for the day to explore how dinosaurs lived.

## GRADES 1 TO 5

### Structures & Forces

January 13 - 31, 2020

Are you ready for the storm? From houses to bridges, structures play a key role in our everyday lives. Natural forces, like storms, hurricanes, and tornadoes, act upon structures engineered to withstand them. Your students will learn how to build structures to see if they can weather the storm.

Register online at [sciencenorth.ca/schools](http://sciencenorth.ca/schools) or by calling 705.523.4629. For questions about these experiences, contact the Education Staff Scientist at 705.522.3701 ext. 295.

## GRADES 4 TO 12

### Modern Mining & Technology Sudbury (MMTS) Week

May 8 - 15, 2020

At this annual event, Dynamic Earth joins forces with Modern Mining and Technology Sudbury (MMTS) to create experiences that promote mining and the variety of rewarding careers that it offers. Join us during this week for full-day experiences including our annual MineOpportunity Games, Discover Sudbury Days, as well as Teacher Training with Student programming Days.

Visit our website for full details of all the events. Registration, lunch and busing is included!

Supported by:







**Outdoor Science Park**

(Weather Permitting)

**Open Sept. 4, 2019 to Sept. 20, 2019  
& May 4, 2020 to June 26, 2020**

Planning for free exploration time on your visit? Join us outdoors at the foot of the famous Big Nickel!



**Underground Tour: In the Footsteps of Sudbury's Miners**

60 minutes

Experience Dynamic Earth's iconic underground tour, featuring multimedia and special effects that bring Sudbury's mining heritage and innovation to life.

Students will walk in the footsteps of thousands of miners, from the early days of mining until modern times!

**MULTIMEDIA EXPERIENCES**

**Epiroc Theatre**

The only digital theatre of its kind in Northern Ontario, the Epiroc is equipped with high-quality HD educational films, making this a great addition to your school visit, included with your admission.

**Choose a film from our library that suits your students' interests:**

PLANET EARTH: CAVES - POWER OF THE PLANET: VOLCANO - GOLD FEVER - GROUND RULES

**Nickel City Stories GRADES 1 TO 12**

Step back in time when you enter the Generations Barbershop, an engaging multimedia setting, and listen in as Louie, curator of Sudbury's oral history, recounts the fascinating events that shaped the last 125 years of Sudbury's history.

**Rocks to Riches GRADES 4 TO 12**

Ready for some heavy metal? This walk-through theatre experience features state-of-the-art presentation technology taking students step-by-step through the processing of nickel and copper, from the mill to the smelter to the refinery. You'll never see your kitchen sink or plumbing pipes the same way again!

Special Exhibition

February to September 7, 2020



**UNDER the ARCTIC**  
Digging into Permafrost

Your expedition starts at Dynamic Earth. Students will enter the world of the Western Hemisphere's only permafrost research tunnel and take in sights and sounds that are usually hidden underground. Frozen grasses, ancient ice formation and Ice Age fossils will help provide students with clues to Earth's past and future climates. In the Field Lab, they will learn from hands-on experiments, interactive models and exciting game that explore the cause and consequences of climate change for all of us.

This exhibit was developed by the *Oregon Museum of Science and Industry (OMSI)* in collaboration with the *Geophysical Institute at the University of Alaska Fairbanks* and an Alaska Native advisory group.

Dynamic Earth offers specialized school programs to complement your full-day field trip.

Under the Arctic: Digging into Permafrost was produced and is toured by the Oregon Museum of Science and Industry. The exhibit was developed in collaboration with the Geophysical Institute at the University of Alaska Fairbanks and made possible by a National Science Foundation (NSF) grant.



**Discover Sudbury Field Trip**

**GRADES 4 TO 12**

**September 2019 & April to June 2020 Only**

This two-hour guided tour explores the stories buried in the rocks under our feet, showcases various geological and historical mining sites, and highlights how the local geology and mining has shaped Greater Sudbury. Make sure to download the *Discover Sudbury* GPS-enabled, smart phone app to accompany you on the tour!

**You provide the bus, and our scientist leads your tour! COST: \$200 plus applicable taxes**





# Sunset to Sunrise Camp-in

**GRADES 4 TO 12**

## **An all-night science extravaganza!**

There is no other program like it! Our enthusiastic and energetic Bluecoats keep your students engaged from 7 p.m. to 7 a.m.

Kick-off the school year or celebrate the end of it, as we help students see the value and fun of science!

Our qualified science staff leads discoveries in a safe and fun environment that includes:

- > Educational and exciting hands-on science programs
- > Unique multimedia theatres
- > A captivating live science show
- > A visit to the *F. Jean MacLeod Butterfly Gallery*
- > Exciting science challenges
- > Science centre exploration
- > A giant-screen IMAX® film complete with pop and popcorn
- > A healthy continental breakfast

**Available to book all year round.**  
**\* Limited availability in the fall.**

**COSTS** \$73 per student  
\$34 per supervising adults  
(within the recommended ratio)  
\$39 each for additional adults  
(plus applicable taxes)  
Minimum of 25 students is required.

**REGISTER ONLINE AT**  
**[SCIENCENORTH.CA/SCHOOLS](http://SCIENCENORTH.CA/SCHOOLS)**  
**OR CALL 705.523.4629.**

For questions about the experience,  
contact the Education Staff Scientist  
at 705.522.3701 ext. 295.



### **SCIENCE NORTH**

100 Ramsey Lake Road  
Sudbury, Ontario, P3E 5S9

### **DYNAMIC EARTH**

122 Big Nickel Road  
Sudbury, Ontario, P3C 5T7







**BOOK ONLINE**  
**SCIENCENORTH.CA/SCHOOLS**

Science North is an agency of the Government of Ontario and a registered charity #10796 2979 RR0001.  
Dynamic Earth is a Science North attraction.