TELUS WORLD of SCIENCE Edmonton

SCIENCE IN MOTION

PROGRAM GUIDE 2018-2019

What is *Science in Motion? Science in Motion* is a TELUS World of Science – Edmonton exclusive School Program offering that brings exciting science presentations to your classroom.

Through experiments, demonstrations and hands-on activities, we make science fun, dynamic and easy to understand. The programs that *Science in Motion* delivers meet learner expectations set out by the Alberta Science Curriculum, making them a valuable resource for your school. We offer a variety of classroom, assembly and community presentations to reach a wide audience of students, adults, and families. Community presentations can be hosted either by your school or other organizations such as public libraries.

Science in Motion enhances your student's science experience by bringing our exciting, affordable, and convenient programs to your community.

This Program Guide will outline all of the different classroom, assembly and community presentations available to book for each grade. It also provides detailed descriptions of each *Science in Motion* program, and their curriculum connections. For more information visit our website at **twose.ca/SIM** or call our Bookings Office at **780-451-3344**.

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CLASSROOM PRESENTATIONS

KINDERGARTEN

Additional adult helpers are always welcome!

Bubble, Bubble – 1 hour
Can you blow the biggest bubble? Student 'bubbleologists' use everyday tools to create amazing bubble masterpieces and discover the fun of bubbles through hands-on experiments.

Chilling Out – 1 hour
Get ready for some cool science! Students will explore ways in which humans and animals prepare themselves for cold weather. We also make a tasty cool treat using liquid nitrogen.

Allergy Alert: *Ice cream – homogenized milk, whipping cream, sugar, vanilla extract, ice cream cones.*

Powerful Patterns – 1 hour
Be amazed by the power of patterns! Students will work through a series of stations to explore patterns in objects all around us, investigate patters in nature, and create their own patterns using a variety of instruments and materials.

Additional Program Requirements: a white surface or projection screen

All classroom presentations require 2 tables, a garbage can, electrical outlet, and access to water. Nametags are required for all students.

GRADE 1

Additional adult helpers are always welcome!

Bubble, Bubble – 1 hour
Creating Colour
Building Things
Math – Geometry

Can you make a cube-shaped bubble? Student 'bubbleologists' investigate the secrets of bubbles. Using a variety of tools, they will explore the shapes and colours of bubbles and challenge themselves to blow bubbles of exactly the right size to create bubble pictures.

Build It! – 1 hour
Building Things

Help the 3 little pigs escape the wolf with three building challenges. Your students will build a house, tower, and a creature using a variety of creative materials. Student models will be tested in our custom designed testing area.

Colour Light – 1 hour
Creating Colour

What is colour and how do we see it? Students discover the spectrum that makes up white light and experiment with colour mixing and separation.

Additional Program Requirements: a room that can be darkened, a white surface or projection screen

Cold Adapters – 1 hour
Seasonal Changes
Needs of Animals and Plants

How do polar bears stay warm in the cold Arctic climate? Students discover some heat keeping secrets and investigate how different animals react to changes in temperature. We also make a tasty cool treat using liquid nitrogen.

Additional Program Requirements: a white surface or projection screen

***Allergy Alert:** Ice cream – homogenized milk, whipping cream, sugar, vanilla extract, ice cream cones.*

Sensational Senses – 1 hour
Senses

Our five senses give us the ability to interpret and interact with the world around us. Students will tickle each sense through a variety of experiments including learning the first letter of their name in Braille, listening to a wordless story, and tasting with their nose plugged.

Additional Program Requirements: a white surface or projection screen

***Allergy Alert:** Jelly Belly® jelly beans – none contain nuts as an ingredient; however, they are produced in a plant that processes peanuts. Jelly Bellys do not contain gelatin but do have beeswax.*

GRADE 2

Boats & Floats – 1 hour
Buoyancy and Boats

What floats and what sinks? You may be surprised! Students will help Captain Clancy Buoyancy save his treasure by building a sturdy and stable boat. Learn the basics of buoyancy and density through hands-on activities and demonstrations.

Additional Program Requirements: a white surface or projection screen

Sub Zero – 1 hour
Hot and Cold Temperature

What keeps hot things hot and cold things cold? Students explore the ins and outs of insulation and experiment with the effect of heat on cold air molecules. We also make a tasty cool treat using liquid nitrogen.

Allergy Alert: *Ice cream – homogenized milk, whipping cream, sugar, vanilla extract, ice cream cones.*

Magnetic Marvels – 1 hour
Magnetism

What is attracted to a magnet and what is not? Students explore magnetic forces, observe magnetic fields and explore the power of strong electromagnets.

Additional Program Requirements: a white surface or projection screen

Splish Splash – 1 hour
Exploring Liquids

Get your student's feet wet in a program all about liquids. Race different kinds of liquids, compare liquid densities, and investigate the water cycle. This presentation will quench your student's thirst for knowledge.

GRADE 3

Junior Engineers – 1 hour
Building with a Variety of Materials
Testing Materials and Designs

How can you make a structure strong? As engineers, students construct model machines using LEGO® Technic Kits and design solutions to mechanical problems.

Sounds Around – 1 hour
Hearing and Sound

Can we make noise in outer space? Students explore how sound travels and how it is heard. They learn about sound waves and observe the pitch and volume of their voices on an oscilloscope.

Additional Program Requirements: a white surface or projection screen

Thrill Rides – 1.5 hours $30.00 surcharge
Building with a Variety of Materials
Testing Materials and Designs

Can your team build an exciting ride with the required loops, curves and drops? Students explore the science of design, construction and testing as they build a model roller coaster.

Program Requirements: a white surface or projection screen

GRADE 4

Light Fantastic – 1 hour
Light and Shadows

How does light travel? Students use a variety of optical devices to reflect and refract light. They also learn how the eye sees colour and experiment with coloured shadows.

Additional Program Requirements: a white surface or projection screen, a room that can be darkened, 2 or more electrical outlets

Simple Machines – 1 hour
Wheels and Levers
Building Devices and Vehicles that Move

What are simple machines and how are they useful in our world? Students use LEGO® Technic Kits to construct model machines that incorporate a variety of simple machines to get the job done.

Thrill Rides – 1.5 hours $30.00 surcharge
Building Devices and Vehicles that Move

Students work as engineers to build safe, fun, exciting roller coasters. Who can fulfill all the building requirements, and have the most exciting design?

Additional Program Requirements: a white surface or projection screen

GRADE 5

Complete the Circuit – 1 hour
Electricity and Magnetism
Mechanisms Using Electricity

Has the house been wired to code? As electricians, students learn how to draw the diagrams for simple, series and parallel circuits. They build each circuit on an electrical “house” to activate lights, a doorbell and a window alarm.

Additional Program Requirements: a white surface or projection screen, 2 electrical outlets

Weather Works – 1 hour
Weather Watch

What are the driving forces of weather? What makes the wind blow? Students will get a taste of meteorology as they discover how the sun influences weather patterns, and make their own cloud in a bottle.

Additional Program Requirements: a white surface or projection screen

GRADE 6

All About Flight – 1 hour
Air and Aerodynamics
Flight

How are aircrafts able to take flight? As engineers, students build gliders and other flying machines while learning about the properties of air and aerodynamics.

Additional Program Requirements: a white surface or projection screen, large space

Heavenly Bodies – 1 hour
Sky Science
What can you see in the night sky? As backyard astronomers, students observe a variety of celestial phenomena during this presentation. The night sky is recreated inside our inflatable mobile planetarium, where students learn to navigate their way through the constellations.

Additional Program Requirements: needs to be booked in a gymnasium due to size of dome

GRADE 7

Heat it Up! – 1 hour
Heat and Temperature

Armed with infrared laser thermometers, students will have the opportunity to investigate thermal energy. While exploring the particle model and the applications of heat transfer, students will also learn about the differences between conduction, convection and radiation. Spark student interest with experiments that are sure to expand their knowledge of thermodynamics.

Additional Program Requirements: a white surface or projection screen

Roller Coaster Science – 1.5 hours $30.00 surcharge
Structures and Forces

Which team will design the best gravity-defying roller coaster with loops, curves and drops? Explore how the forces of friction and gravity affect the speed and safety of your ride.

Additional Program Requirements: a white surface or projection screen

GRADE 8

Eyes on Optics – 1 hour
Light and Optical Systems

Focus your students' attention on the nature of light using laser mazes, diffraction gratings and an array of optic tools. Test the refraction indices of different materials and recreate Newton's spectrum experiments. Reflect on how optics light up the world around us.

Additional Program Requirements: a white surface or projection screen, a room that can be darkened, 2 or more electrical outlets

Pump Mechanics – 1 hour
Mechanical Systems

How can pressurized air help create moving parts for simple machines? Students use LEGO® Pneumatic Kits to study the basics of pneumatics.

Roller Coaster Science – 1.5 hours $30.00 surcharge
Mechanical Systems

Can your team harness the potential energy of gravity to build a fast, exciting roller coaster? Study how the design and mechanical elements of your roller coaster affect the kinetic energy of the system.

Additional Program Requirements: a white surface or projection screen

GRADE 9

Power Up – 1 hour
Electrical Principles & Technologies

Electricity doesn't grow on trees, so let's make it another way. In this program students will learn the many ways energy can be converted into electricity, and their applications. We'll use thermoelectric cells, solar cars, and even make a pickle glow!

Additional Program Requirements: a white surface or projection screen, 2 or more electrical outlets

Exploration Generation – 1 hour
Space Exploration

Learn more about how we can explore the universe – without ever leaving the Earth! Students will be surrounded by the stars in our digital mobile planetarium dome. Discover space theories from the past and technologies that have helped us overcome the challenge of space travel, as well as what new challenges we face on our way to Mars and beyond.

Additional Program Requirements: needs to be booked in a gymnasium due to size of dome

SENIOR HIGH

Roller Coaster Science – 1.5 hours $30.00 surcharge
Physics

Look at physics from a practical, fun perspective. Real world applications of the three laws of motion, forces of gravity and friction, and the conservation of gravitational potential energy to kinetic energy as they apply to roller coaster rides.

Additional Program Requirements: a white surface or projection screen

ASSEMBLY PRESENTATIONS – 1 hour

Created for a wide range of grade levels, and to spark student's general interest in each topic.

Bite-Sized Science
A bit of this and a bit of that … Students will engage in a variety of exciting demonstrations that spark their imaginations! Satisfy their craving for science.

Cryogenics
Experience the ultimate cool as we explore the effects of liquid nitrogen on matter. Discover the reaction when gases, liquids and solids are exposed to extreme temperature changes.

Electricity
Discover the shocking world of electricity and charged particles. We explore static electricity, current electricity, attraction and repulsion through the use of a Plasma Globe, Tesla Coil, and a Van de Graaff Generator.

Fire & Gas
We explore the fascinating phenomenon of fire with an in-depth look into combustion. Observe the creation of a fire cyclone. See flames of bright fuchsia, green, and red. Solve the mystery of the gases. Students are sure to get a *BANG* out of this assembly.

For the Love of Chemistry
Can two clear liquids combine to make all the colors of the rainbow? Find out for yourself! Get ready for exciting sights and sounds as we explore the wonderful world of chemistry. Students will witness reactions and chemistry like never before!

Use the Force
Let's harness the power of the forces around us! We'll show you the levitation of a hovercraft, the thrust that a rocket engine can provide, and the velocity of a ping pong ball in our pneumatic cannon. Come and learn many exciting ways to use the forces of physics!

All Assembly Presentations require 2 tables, a garbage can, 2 or more electrical outlets, and access to water.

COMMUNITY PRESENTATIONS – 1 hour

Science in Motion offers evening presentations to serve the needs of communities across Alberta. These presentations can only be offered when the outreach team is presenting at a local school during the day. Included in all presentations are our fun and challenging Science Brainteasers. Please call us to find out when we are scheduled to be in your area.

All community presentations require 2 tables, a garbage can, 2 or more electrical outlets, and access to water. Community presentations must be booked in a large space, such as a gymnasium.

Bite Sized Science

Can you see music? Can you hear fire? Will sugar bears burn? We will explore various fields of science with a variety of demonstrations sure to spark the interest of students and satisfy their craving for science! *Maximum capacity is 250.*

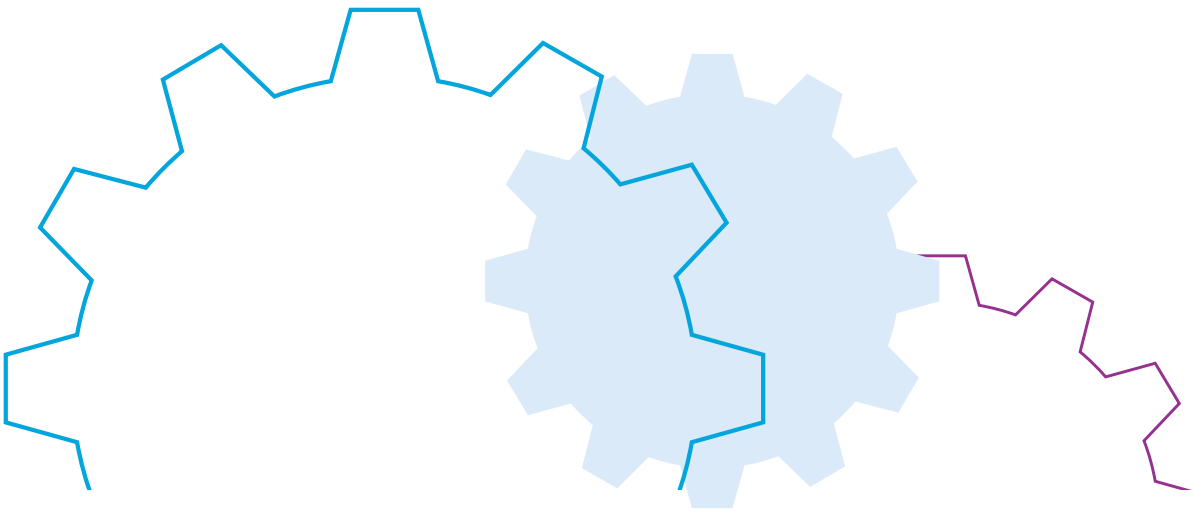
The Night Sky

Tour the Solar System and its celestial bodies through a visit to our Mobile Planetarium. *Maximum capacity for planetarium is 30 at a time.*

Enchanted Reef

Experience the film *Kaluoka'Hina – The Enchanted Reef* in our full-dome mobile theatre. In addition, take some time to build a coral model with LEGO®, see stunning images of coral reef life, and explore our ocean box! *Maximum capacity for theatre is 30.*

Note: Assembly Presentations, as outlined on page 12, are also available as Community Presentations, in order to accommodate large groups.



PROFESSIONAL DEVELOPMENT SESSION

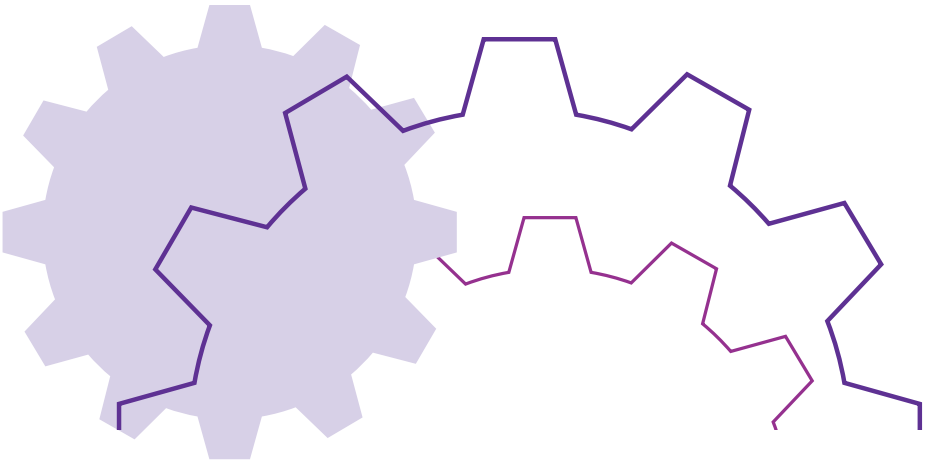
Professional Development Opportunity: Air Quality Lesson Plans – FREE!

This year, for the first time, TELUS World of Science – Edmonton's Science In Motion team will deliver professional development to teachers in rural Alberta!

Attendees to Air Quality workshop will receive:

- 10 hour modular air quality lesson plans for their class
- Supplies for investigating air quality in real time
- 3 hour workshop session to introduce air quality concepts, methods, and lesson materials

Sessions must be booked for a minimum of 10 teachers.



PROGRAM FEES

General Information

- A program day consists of 4 programs and may be any combination of classroom presentations and assemblies.
- Schools with an Indigenous student population of 50% or more may be eligible for additional discounts on our regular presentation fees. Please call our Bookings Office at 780-451-3344 for more information.

Travel Cost

- $225.00 per day travel charge (includes GST)

Presentation Cost (GST exempt)

- $425.00 for 4 x 60-minute classroom presentations
- Assembly surcharge = $60.00 per assembly *(see note under Group Size)*
- 90-minute presentation* surcharge = $30.00 per 90-minute presentation

** Note: Most school days cannot accommodate more than one 90-minute presentation per presentation day.*

Group Size (GST exempt)

Classroom presentations – maximum of 30 students per presentation.
Assemblies – up to 250 students.
For groups over 250 students, add $0.50 per student.

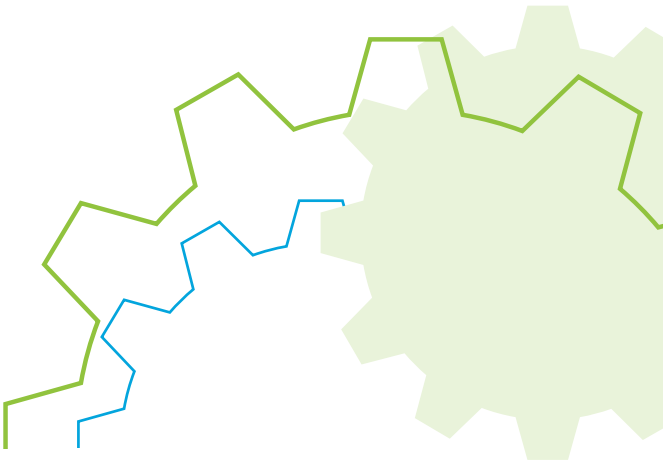
Community Presentations (+ GST)

$300.00 per program. Bookings for these programs will need to be coordinated with other presentations in your area. Refer to the Community Presentations section on page 13 for more information about maximum capacity. Call our Bookings Office to inquire about the cost for multiple presentations.

Science Brainteasers

Brainteasers must be requested at the time of booking. Included with any school booking. Experience a variety of fun and challenging puzzles for the students and staff to enjoy. Brainteasers self-discovery stations are not staffed by *Science in Motion*.

PROGRAMS AND PRICES SUBJECT TO CHANGE WITHOUT NOTICE



BOOKING INFORMATION

Science in Motion serves communities farther than 100 km from Edmonton. TELUS World of Science – Edmonton invites nearby communities to visit our facility and make use of our in-house school programs.

To ensure effective use of resources, *Science in Motion* bookings are organized around a 3-day presentation week (Tuesday to Thursday). For single or two-day bookings, we will need to book with other local schools to fulfill the 3-day requirements for your area. All bookings are tentative until the week has been fully booked.

Requests may be made at anytime for the current or the following school year. Bookings are based on a first come, first served system – all requests are considered, but not guaranteed.

Upon confirmation of presentation dates, a 50% deposit is due within 10 business days to secure the date(s).

Full payment of programs is due 14 days prior to presentation date.

For more information on booking your *Science in Motion* presentation, call our Bookings Office at **780-451-3344**.

CANCELLATION POLICY

- Program cancellations received with 8 weeks notice or more will receive a full refund less a $50.00 Administration Fee per presentation day booked.
- Program cancellations received with less than 8 weeks notice will forfeit the 50% deposit.
- Program cancellations received with less than 14 days notice will result in the full program fee being charged.
- In the event that TELUS World of Science is unable to present a program due to inclement weather or other unforeseen circumstances, a full refund will be issued if an alternate date is not available.

TELUS WORLD of SCIENCE Edmonton

For more information about
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