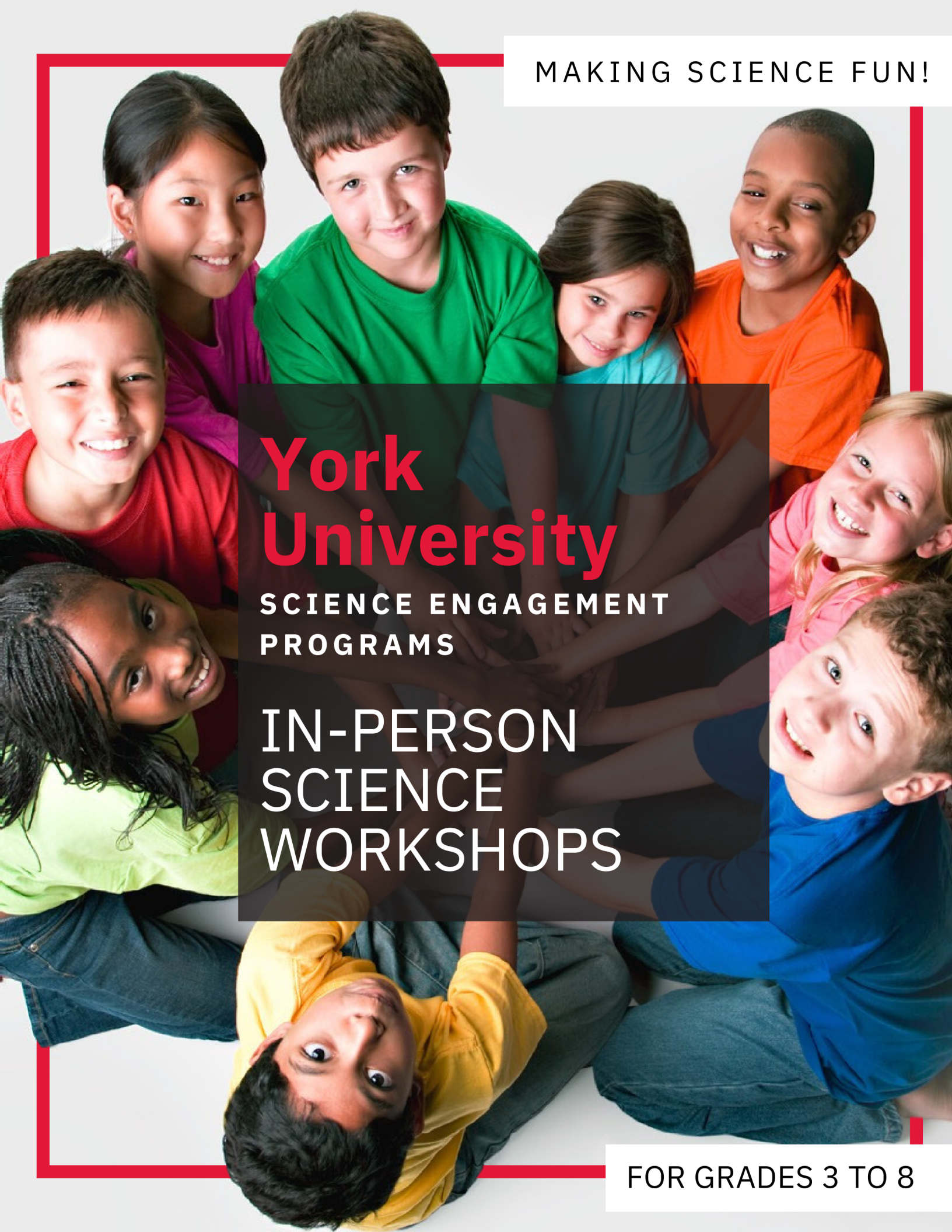


MAKING SCIENCE FUN!

York University

SCIENCE ENGAGEMENT PROGRAMS

IN-PERSON SCIENCE WORKSHOPS

FOR GRADES 3 TO 8

Bring STEM Alive in Your Classroom!

At Science Explorations, our objectives align directly with yours! Our In-School Workshops are designed to excite youth about STEM and ignite a genuine passion for learning. Our hands-on workshops complement your regular classroom instruction and directly support the learning expectations of the Ontario Elementary Curriculum.

Our Hands-On Approach

Our high-energy and interactive workshops use a hands-on, discovery-based approach to learning. Students work in teams through guided projects and experiments to gain an understanding of abstract STEM concepts. Our instructors also share related scientific research taking place at York University and discuss real- world applications of topics, making the learning relevant to the students' day-to-day lives.

Our Instructors

Our team consists of enthusiastic undergraduate science and engineering student instructors. They have an infectious passion for STEM, magnetic personalities, and a genuine desire to inspire youth. In addition to STEM subject mater expertise, our instructors have extensive training in pedagogy, best practices in teaching and instruction, effective classroom management and conflict resolution. They also have training in community building, diversity, and inclusion. Our team reflects the diversity of today's GTA classrooms – meaning they make for great role models for your students!

A PROUD MEMBER OF ACTUA

Actua is a national organization of 40 university-based STEM outreach programs. Our pedagogical approach is shared by Actua members across Canada, and has been rigorously tested and evaluated. This approach is based on the supposition that the skills, knowledge, and attitudes of scientifically literate people are the same skills, knowledge, and attitudes of 21st century thinkers and leaders. This means that regardless of whether or not a child pursues a STEM field, developing these STEM skills will help better prepare them for the future.

ABOUT THE FACULTY OF SCIENCE

York University is proud to have one of the leading Faculties of Science in Canada. The Faculty is an emerging research powerhouse and is home to 140 professors, many of whom are recognized internationally as leaders in their fields. The Faculty has particular research strengths in the areas of genetics, neuroscience, regenerative medicine, astrophysics, pharmaceutical chemistry, epidemiology and mathematical disease modeling, computational biology, high-energy and particle physics, ecology and evolutionary biology, atmospheric chemistry, and actuarial science.

For more visit: science.yorku.ca

What GTA Teachers Say About Our Workshops:

"The students enjoyed themselves today! They had fun building and test flying their planes too! Overall, it was well presented and organized."

MS RIELLY

GRADE 6 TEACHER – FERNFOREST PS

"The workshops were very engaging and educational for the students. Instructors were good at probing students to answer questions and take part in the lesson."

MRS GURRERI

GRADE 7 TEACHER – OUR LADY OF THE ROSARY

"The instructors worked well together to transfer their love of science to the students. Well done to the York Faculty of Science for such a quality program!"

MS LUCIANI

GRADE 5 TEACHER – OUR LADY OF PEACE

" Highly engaging, hands - on—Fun!

MR LEMOINE

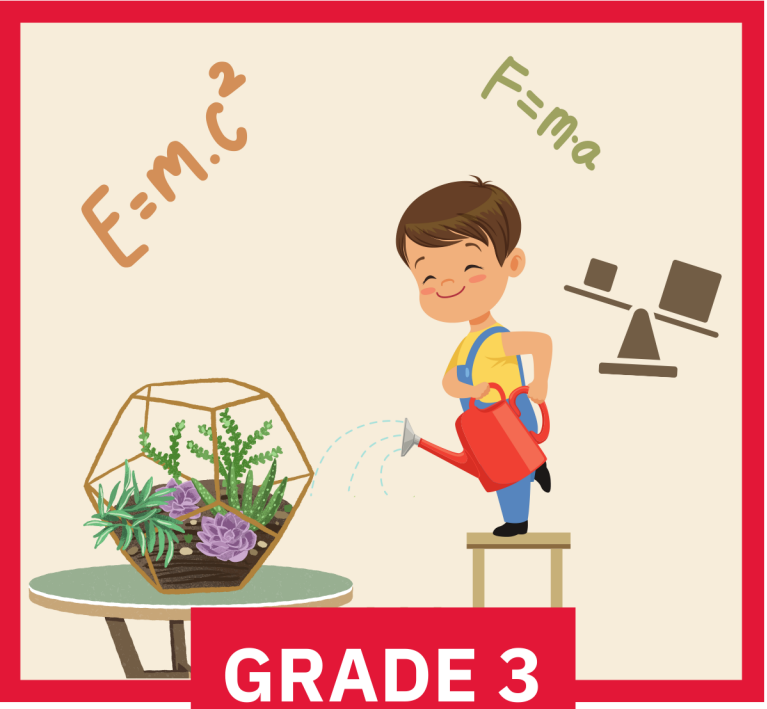
GRADE 8 TEACHER – ADRIENNE CLARKSON PS

"The workshop was very informative and easy to understand. Hands-on! Kids love that!"

MRS GILL

GRADE 7 TEACHER – GREAT LAKES PS

science | YORK U



GRADE 3

Binary Bracelets

STEM Skills

Learn about why and how computers use binary code. They will learn about ASCII encoding and create a bracelet encoding characters in binary.

Workshop Length: 1.5 hours
Take-Home: One bracelet per student
Required: N/A

Terrarium

Life Systems:
Growth and Changes in Plants

Explore concepts of the water cycle, plant growth and ecosystems by building a small terrarium necklace!

Workshop Length: 1.5 hours
Take-Home: One terrarium necklace per student
Required: N/A

Fun Friction

Matter and Energy:
Forces Causing Movement

Use the Engineering Design process to design, build, and test cars that stop within the designated area to investigate the laws of physics such as contact and non-contact forces.

Workshop Length: 1.5 hours
Take-Home: One car per group
Required: N/A

Soil Profiles

Earth and Space Systems:
Soils in the Environment

Explore the different types of biomes in the world and investigate how their soil profiles impact their ability to grow food.

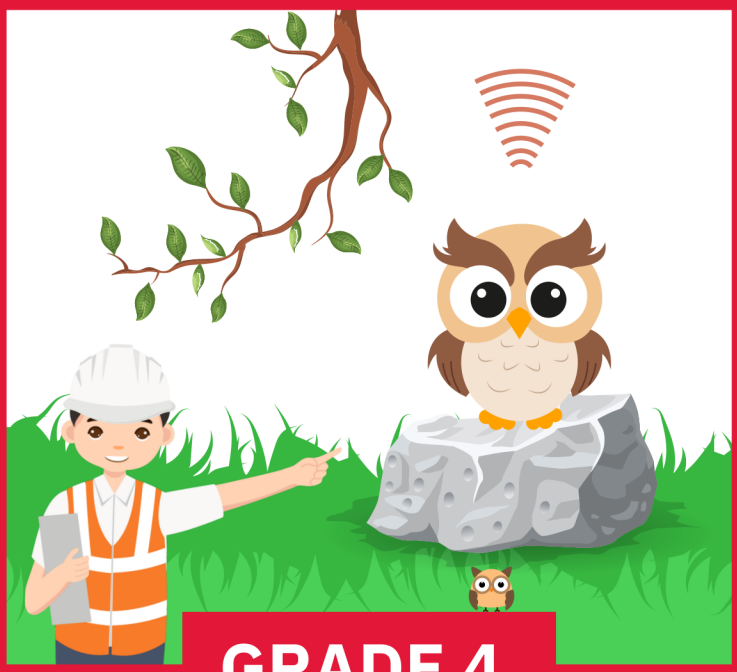
Workshop Length: 1.5 hours
Take-Home: None
Required: N/A

Pasta Bridges

Structures and Mechanisms: Strong and Stable Structures

Examine the architectural structure of various types of bridges, and use this knowledge to challenge your team to build a successful load-bearing bridge for your scenario.

Workshop Length: 1.5 hours
Take-Home: One bridge per group
Required: N/A



GRADE 4

Crack the Code

STEM Skills

Learn about cryptography, concepts of encryption and decryption, and how to create strong passwords.

Workshop Length: 1.5 hours
Take-Home: Worksheet
Required: N/A

Owl Pellet Dissection

Life Systems: Habitats and Communities

Learn about owl species and their habitats and investigate specific adaptions that owls have made to survive. Students will be given a chance to dissect an imitation owl pellet. *one real owl pellet will be provided to the teacher for reference*

Workshop Length: 1.5 hours
Take-Home: None
Required: N/A

Invisible Sound Waves

Matter and Energy: Sound

Students will use a tuning fork to test different ways that sound waves can be manipulated, and investigate how different materials can affect the transmission of sound waves.

Workshop Length: 1.5 hours
Take-Home: None
Required: N/A

Geologists!

Earth and Space Systems:
Rocks, Minerals and Geological Processes

Students will learn about the different types of rocks and the minerals found within them, and how to classify their own rocks.

Workshop Length: 1.5 hours
Take-Home: Three rock samples per student
Required: N/A

Super Simple Machines

Structures and Mechanisms:
Gears and Pulleys

Students will learn to combine and construct super simple machines. Select which of the three options you would students to test out: catapults (levers), pulleys or gears.

Workshop Length: 1.5 hours
Take-Home: One contraption per group
Required: Access to chairs

GRADE 5

My Robotic Friend

STEM Skills

Explore how computers work by modelling computer functions and learning about programming logic in this unplugged activity.

Workshop Length: 1.5 hours
Take-Home: One code per group.
Required: N/A

Living Lungs

Life Systems: Human Health and Body Systems

Students will design and build a working model of the respiratory system.

Workshop Length: 1.5 hours
Take-Home: Lung model per student
Required: N/A

Awesome Ooze

Matter and Energy:
Properties of and Changes in Matter

Students will use their knowledge of chemistry to synthesize various polymers. *Disclaimer: this is a messy activity*

Workshop Length: 1.5 hours
Take-Home: Ooze sample per student
Required: Access to water

Photovoltaic Solar Cells

Earth and Space Systems:
Conservation of Energy and Resources

Students will design and construct solar powered cars.
Workshop Length: 1.5 hours
Take-Home: One car chassis per group
Required: N/A

Environmental Disasters

Structures and Mechanisms:
Forces Acting on Structures

Students will build and design structures that they will test if it can withstand different natural disasters such as earthquakes, hurricanes and floods.

Workshop Length: 1.5 hours
Take-Home: One structure per group
Required: N/A

GRADE 6

Energy Awareness with Micro:Bits

STEM Skills

Program a Micro:bit to take measurements of environmental data to learn about the impact of energy use on climate change.

Workshop Length: 1.5 hours
Take-Home: None
Required: One laptop per group

Feathered Foragers

Life Systems: Biodiversity

Learn about how natural selection and adaptation contribute to biodiversity and relate its role in maintaining the resilience of species by creating adaptive beaks to survive.

Workshop Length: 1.5 hours
Take-Home: One beak per student
Required: N/A

Circuit City

Matter and Energy: Electrical Phenomena, Energy, and Devices

Let's spark some curiosity into the world of circuits. Learn about the two types of circuits and apply that knowledge to create a light-up trivia board!

Workshop Length: 1.5 hours
Take-Home: One trivia board per student
Required: N/A

Orbiting Solar System

Earth and Space Systems: Space

Create an orbiting solar system that will include the Sun, Moon and various planets.

Workshop Length: 1.5 hours
Take-Home: One model per group
Required: N/A

Fantastic Flight

Structures and Mechanisms: Flight

Investigate principles of flight in flying animals and apply these concepts to design and build their own gliders.

Workshop Length: 1.5 hours
Take-Home: One glider per student
Required: Scissors per student

GRADE 7

Micro:Bit Password Generator

STEM Skills

Cybersecurity is a growing concern as technology advances. Explore the need for strong passwords and design an algorithm to create a strong password generator.

Workshop Length: 1.5 hours
Take-Home: None
Required: Laptop per group

Energy + the Environment

Life Systems: Interactions in the Environment

Students will learn to construct animal food webs while investigating the effects of pollution through biomagnification

Workshop Length: 1.5 hours
Take-Home: One thermos per group
Required: Laptop per group

CSI: Classroom Scene

Matter and Energy:
Pure Substances and Mixtures

Someone has stolen the cookie jar! Luckily, they left a mysterious substance we can use to identify them. Conduct various chemical tests to identify the powder and solve the mystery of the cookie thief!

Workshop Length: 1.5 hours
Take-Home: None
Required: Access to water

Thermos

Earth and Space Systems: Heat in the Environment

Investigate the properties of different materials and their ability to retain, transfer, repel and absorb heat. Students will use Micro:bit to measure how your thermos retains heat and graph your results.

Workshop Length: 1.5 hours
Take-Home: One model per group
Required: Laptop per group

Earthquakes! Let's Shake, Rattle, and Roll

Structures and Mechanisms:
Form, Function, and Design of Structures

Earthquakes can have devastating effects on buildings and communities. Learn about techniques to stabilize these buildings such as widening the base, keeping a low centre of gravity, isolating the base, and adding a damper.

Workshop Length: 1.5 hours
Take-Home: One model per group
Required: N/A

GRADE 8

Computing Fundamentals with Micro:Bit

STEM Skills

Learn about inputs, outputs, hardware and software to create algorithms and write programs for a micro:bit.

Workshop Length: 1.5 hours
Take-Home: None
Required: Laptop per group

Fun with Foldscopes

Life Systems: Cells

Let's explore the microscopic world of life through the use of portable paper microscopes: Foldscopes. Students will examine different specimens and make scientific drawings of their specimen.

Workshop Length: 1.5 hours
Take-Home: Scientific drawings
Required: N/A

Hydraulic Cranes

Matter and Energy: Fluids

Students will integrate their knowledge of fluids and systems in action to create a hydraulic crane.

Workshop Length: 1.5 hours
Take-Home: None
Required: Access to water

Water Filtration

Earth and Space Systems: Water Systems

Construct water filtration devices and investigate how improper disposal of harmful contaminants has serious impact on animal and human health.

Workshop Length: 1.5 hours
Take-Home: None
Required: Access to water

Rube Goldberg Machine

Structures and Mechanisms: Systems in Actions

Students will learn about the various processes and components of a system that allow it to perform its function efficiently through creating their own Rube Goldberg Machine.

Workshop Length: 1.5 hours
Take-Home: None
Required: N/A

YORK UNIVERSITY'S SCIENCE ENGAGEMENT PROGRAMS

OUR STEM OUTREACH

The Faculty of Science at York University has a long history of supporting grade 3–12 STEM outreach in the GTA. In 2023 we reached more than 8,000 youth through our programming. In addition to Specialty Day Programs, we offer Community Workshops in schools and libraries, organize custom Campus Visits for schools and organizations, and host on-campus programs throughout the year to engage youth with STEM.

Elementary Programs

- Science Explorations Summer Camp
  Grades 3–8 | Summer
- March Break Science Camp
  Grades 3–8 | March Break

High School Program

- Spark Lab Program
  Grades 9–12 | Summer

Cancellation Policy

Booking fee is non-refundable, as it reserves the event date, materials purchases, and staff. Cancellations made in writing within 48 business hours will receive a refund of all student costs. Changes to student count will be accepted until 48 business hours before the event.

CONTACT US

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