



GEERING UP
UBC ENGINEERING & SCIENCE FOR KIDS

HIGHSCHOOL STEM WORKSHOPS

Geering Up offers high school science and engineering workshops consisting of exciting demonstrations, interactive experiments, and hands-on activities from January to April. Workshops include two Geering Up instructors equipped with all supplies, enthusiasm and excitement for an hour to an hour and a half session.

Dates: January 14th- April 26th
Length: 1-1.5 hours up to 3 workshops/day

For general workshops: \$160 for 1, \$140 ea for 3, \$120 ea for 6+
For CS workshops: \$180 for 1, \$150 ea for 3, \$130 ea for 6+

To help offset the cost of vehicle rental and travel time, travel fees apply to all schools outside of Vancouver. Please visit www.geeringup.ca/workshops or email us at workshops@geeringup.ca for more information.

SAMPLE SCHEDULE

Each of our teams can teach up to three workshops a day, according to the following schedule. We are happy to accommodate the nuances of your schools' bell schedule.

9:00 am - 10:00 am	Workshop 1
10:30 am - 11:30 am	Workshop 2
1:00 pm - 2:00 pm	Workshop 3

CONTACT US

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ACTUA

Geering Up is a proud network member of Actua. Actua provides training, resources and support to its national network of members located at universities and colleges across Canada in the delivery of science, technology, engineering and mathematics (STEM) education outreach programming. Each year these members engage over 225,000 youth in 500 communities nationwide. Please visit Actua at www.actua.ca.



WORKSHOPS

Grade 8 - Quake Shake

Are you ready for the Big One? A topic very relevant to us in the Lower Mainland, students will be shaken by the mechanisms behind earthquakes, what happens in their aftermath, and how engineers try to prepare for them.

[BC Science Curriculum Links - Grade 8: Plate Tectonics, Major Geological Events](#)

Grade 8 - Wonderful Waves

Students will explore different properties of waves and how they relate to light. Through a combination of demos and hands-on activities, they will learn about types of waves, the differences between mechanical and electromagnetic waves, refraction, and interference.

[BC Science Curriculum Links - Grade 8: Energy as a particle and a wave, electromagnetic radiation, properties and behaviors of light](#)

Grade 8 /9 - Classroom Pandemic

Students will play the role of a disease and race to infect the world! The game will explore the role of human actions, public health, and genetic mutations in speeding up or slowing down the rate of spreading infectious diseases.

[BC Science Curriculum Links - Grade 8: Life processes, our relationship with microorganisms, epidemics and pandemics, Grade 9: Life processes, cellular life](#)

Grade 8/9: Demonstrating Density

Students will explore the concept of density and how it applies to our everyday lives. They will dive into activities that will cover concepts of relative density, relationship of mass and volumes, and apply these concepts in the making of a Galileo Thermometer.

[BC Science Curriculum Links - Grade 8&9: Behavior of matter](#)

Grade 9 - Electrifying Design

Harness the power of electrons with circuitry! Students will learn the basic principles of electrical design and about the difference between series and parallel circuits. Activities will include drawing circuit schematics and building physical breadboard circuits.

[BC Science Curriculum Links - Grade 9: completing circuits, voltage, current and resistance](#)

Grade 10 - Dynamics and Design

Forces and the energy behind them are a major consideration in mechanical engineering projects. Key concepts of mechanics will be conveyed through demos, and students will then apply these principles to design a self-propelling vehicle.

[BC Science Curriculum Links: law of conservation of energy, potential and kinetic energy, transformation of energy](#)

Grade 10 - Rocket Reactions

What actually happens during a chemical reaction? Students will learn about how atoms behave during reactions, will be presented with a variety of reaction, and will apply their knowledge to build micro rockets!

[BC Science Curriculum Links: rearrangement of atoms in chemical reactions, acid-base chemistry, energy change during chemical reactions](#)

Grade 10 - Delightful DNA

Students will play the role of a genetic counsellor, reviewing and applying what they have learned about inheritance, dominance, and pedigrees.

[BC Science Curriculum Links DNA structure and function, patterns of inheritance, applied genetics and ethical considerations](#)

COMPUTER SCIENCE WORKSHOPS

Grades 8 to 10 - Professor Python

Dip your toes into the exciting world of programming! Exercise computational thinking skills through game design, programming and exciting simulations of scientific phenomena!

BC Science Curriculum links : algorithmic thinking, critical thinking, programming languages, principles of design

Grades 10 to 12 - Stimulating Computations

Step into the life of a computational scientist and explore all of the possible outcomes of everyday phenomena! Learn how scientists use computers to solve real problems in STEM.

BC Science Curriculum links : principles of computational thinking, introductory computer programming concepts and constructs, impacts of computers and technology on society, programming language constructs to support input/output, logic, decision structure, and loops

Grades 10 to 12 - Magnificent Micro-controllers

Students will learn how microcontrollers are used in robotic applications as the "brain" of the robot, collecting sensory inputs and turning them into actions. Students will create circuits to connect an Arduino to sensors and actuators, and write a program that controls the system.

BC Science Curriculum links : hardware and software troubleshooting, ways to modify existing code to meet a particular purpose, programming language constructs to support input/output, logic, decision structure, and loops design opportunities

Are your students interested in more information about engineering and science?

We are offering to host luncheons with your students about engineering at UBC, which would be free with workshop bookings. This would involve a short presentation about the overall undergraduate experience at UBC for these fields of study, and a Q&A with students. Our instructors have valuable information and experiences that they are happy to share!

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