EXCEED
ROBOTICS

DISCOVERY ROBOTICS

AGES 7 & 8

DISCOVERY ROBOTICS

7 y.o. start here

8 y.o. start here

1 Introduction to Robotics & Coding
DIS-01 | DIS-02 | DIS-03

2 Advanced Programming Skills
DIS-04 | DIS-05 | DIS-06

3 Computer Design, 3D Printing & Electronics
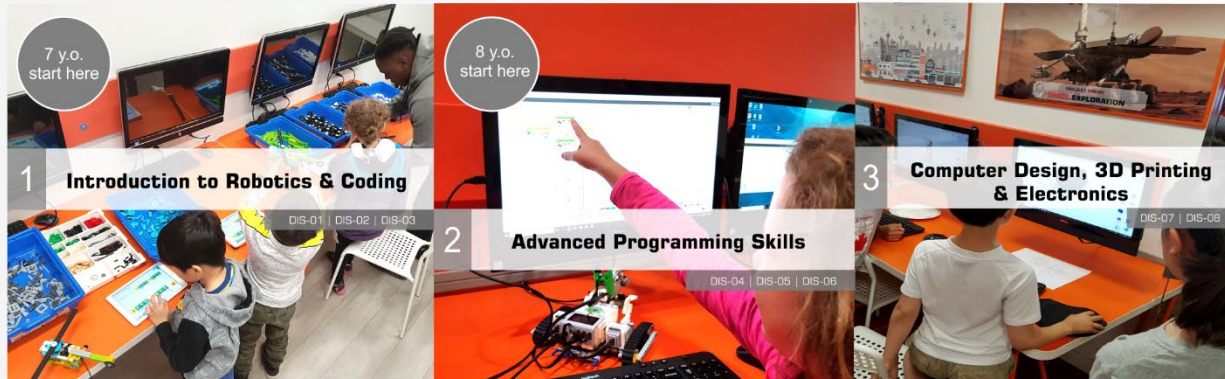DIS-07 | DIS-08

The Ultimate STEM Robotics Program for Inquisitive Minds

The Discovery Robotics curriculum focuses on teaching our youngest students **Programming**, **Computer Design, 3D Printing** and **Electronic Circuits** in a hands-on, step-by-step approach.

All robotics courses follow a structured curriculum with daily challenges designed to promote critical thinking and experiential learning. New robots are introduced in every course to keep students engaged and excited to learn important STEM skills. The end goal of the program is to build confidence in our students and have fun learning!

PROGRAM DETAILS

16-month curriculum

Classes are once per week

One-hour in duration

6 students max per class

The Discovery Robotics curriculum was created by a team of mechatronics engineers with 25+ years of global industry experience to advance STEM education amongst Canada's youth. The Discovery Robotics program's vision is to introduce programming, mechanical design, and electronics to young students through real-world applications and a step-by-step approach.
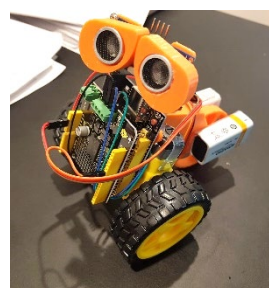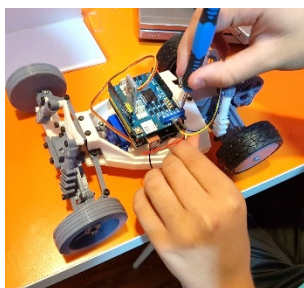
Alumni Robotics (ages 11+) Projects

1	INTRODUCTION TO CODING & ROBOTICS

DISCOVERY 1: ECO-QUEST
Prerequisite: ages 7+ (no experience required)

The first robotics course in the Discovery Robotics curriculum involves students building their own programmable Lego robots in class and using their iPads to code.

Every class begins with the introduction of a particular concept followed by students assembling, programming and conducting experiments For example, to teach the concept of speed versus wheel size, students build, program, and time their race cars, experimenting with both large and small wheels.

DISCOVERY 2: MECH-TREK
Prerequisite: Discovery 1

This second robotics course focuses on mechanical concepts taught by building machines using a different Lego platform.

Each class involves students learning about a different mechanism and building their own simple machine. Students learn about pulleys, gears, cranes, levers and so much more. In addition to coding, students will also learn mechanics and electronics in this robotics program


DISCOVERY 3: LOGIC JUNGLE
Prerequisite: Discovery 2

A transitionary course tapering away from building robots to focusing on developing fundamental programming skills.

Designed to teach kids sequential logic in coding by instructing a robot to complete various travel and adventure challenges. Conditional statements are introduced by having the robot make decisions throughout each adventure, programmed using iPads.
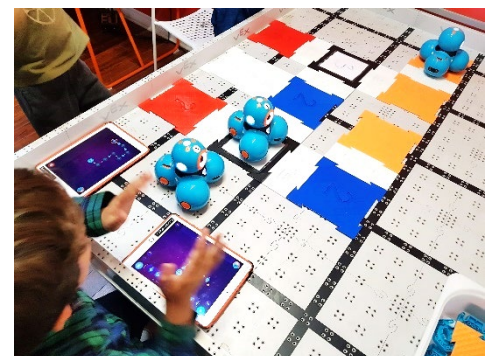
DISCOVERY 4: ROBO-GAMES

Prerequisite: Discovery 3

Students continue to build their programming skills, this time transitioning away from iPads to using computers.

An advanced Lego robotics platform allows students to start learning robotics at a higher level. Various Olympic-style challenges are designed to teach students how to use more complex sensors which assist in detecting different conditions when competing in our Robo-Games.


DISCOVERY 5: SUMOBOT CHALLENGE

Prerequisite: Discovery 4

A fun application course designed for students to practice and apply their knowledge from previous courses.

This course is a fun way for students to practice what they've learned in previous classes. They'll program Sumo robots with different motors and sensors to push other robots out of the ring. Color sensors monitor the ring's edges, while ultrasonic sensors track the other robot. Everyone will have a great time during this class, but only one Sumobot will win in the end!
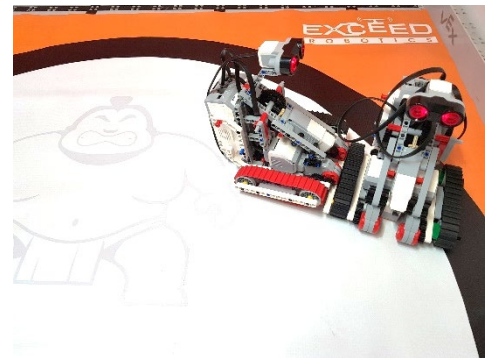
DISCOVERY 6: ROBO-RESTAURANT

Prerequisite: Discovery 5

"I'll have a kale salad with Parmesan and a ginger ale, please..."
The final course in the Advanced Programming Skills series brings this futuristic scenario to life – robots waiting tables in a Robo-Restaurant. Students will independently program their bots to deliver dishes from the kitchen to customers, using sensors to make decisions based on each order. This fun challenge not only sharpens programming skills but also promotes critical thinking as students design the restaurant of the future. It's a creative way to apply their knowledge and imagine tomorrow's technology in action.
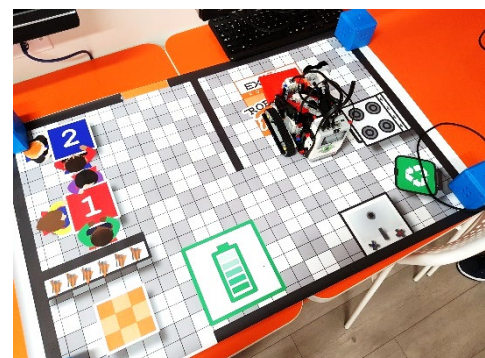
DISCOVERY 7: COMPUTER DESIGN & 3D PRINTING

Prerequisite: Discovery 6

A change in gears into the world of mechanical design and 3D printing!

Students will be introduced to computer design where they will produce their own creations using a 3D printer. Various design projects including art, fashion, architecture and medical devices provide students with real-world applications of 3D printing.

In the last two classes, students design, print, and assemble their own motorized race car, which they get to take home.


DISCOVERY 8: SIMPLE CIRCUITS

Prerequisite: Discovery 7

The final course of Discovery Robotics introduces students to simple electric circuits.

Students will build circuits in each class relating to traditional and emerging applications including solar power, wind sensing, FM radios, transistors and motor drives. At the end of the program, our students would have covered basic electronics, advanced programming and mechanical design which lays a solid foundation for the next robotics curriculum (Ages 9-11).
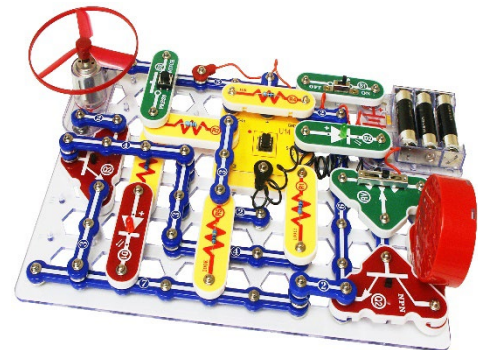
What's Next?
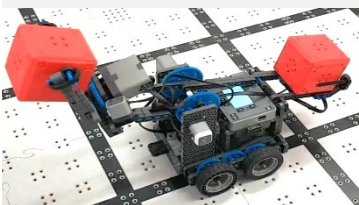
Robotics for ages 9-11 is designed for students graduating from the Discovery program who want to further advance their skills in programming, mechanical design, 3D printing, and electronics. This program delves deeper into these key areas, teaching them at an increasingly advanced level. As they progress, students will be introduced to programmable microcontrollers, allowing them to create custom robots and take their learning to the next level.