



## R2D2 Lab 2019 Dec Holiday Camp

Dear Parents,

Our action-packed *STEM Camp* is back with more exciting activities to ensure your child is meaningfully engaged during the year-end school holiday.

Camp Programs	19/11 - 22/11	26/11 - 29/11	03/12 - 06/12	27/12-30/12
Scratch Coding for Robotics (6 - 8 years old)	10am-12.30pm	10am-12.30pm		10am-12.30pm
Advanced Coding with Scratch (8 -10 years old)	10am-12.30pm	10am-12.30pm	10am-12.30pm	
Your First Arduino Robot (8 – 10 years old)	1.30pm-4pm	1.30pm-4pm	10am-12.30pm Or 1.30pm – 4pm	1.30pm-4pm
Robot Makers with Graphic Arduino (11 - 14 years old)	10am-12.30pm	10am-12.30pm		10am-12.30pm
Python Explorers (11- 14 years old)	1.30pm-4pm	1.30pm-4pm	10am-12.30pm	1.30pm-4pm

Programme Combo	Combo-1 for 8 to 10 years old	Combo-2 for 11 to 14 years old
Programmes Included	<ul style="list-style-type: none"> <li>Your First Arduino Robot</li> <li>Advanced Coding with Scratch</li> </ul>	<ul style="list-style-type: none"> <li>Robot Makers with Graphic Arduino</li> <li>Python Explorers</li> </ul>
Why Combo	Exposure to complimentary skills sets at once: coding and algorithm thinking enhanced by its application in robot system prototyping	
Extra discount	\$80 off total bill (before GST)	\$80 off total bill (before GST)

### Programme Introduction

#### Scratch Coding for Robotics (6 - 8 years old)

Scratch is a visual programming language that will kickstart the students’ interest in coding. Robotics skills, e.g., system level thinking, multi-disciplinary knowledge, hands-on building, are necessary for all kids. Scratch + Robotics is definitely killing two birds with one stone.

This camp serves as an entry course for students to step into the world of robotics using the popular Scratch coding environment. Students will not only learn basic programming functions such as loop for repeated operations, conditional branching to implement different selections



but learn the fundamental ideas about robot structure, sensors, motion, etc. Finally, students will build the prototypes using parts not from the off-the-shelf robot kits, but electronic boards, wires and 3D-printed parts. After the camp, students will not only be able to develop some basic problem-solving and program design skills but to design and build simple robot systems by themselves. They will be proud to see their own products working at home. After the camp, students will bring back the necessary boards and systems they build in the classroom to play with their peers and this will give them opportunities to continue to practice.

**Fees: \$450 + \$50 material fees, early bird \$420+\$50. (GST applies)**

### **Advanced Coding with Scratch (8- 10 years old)**

If kids want to play video games, why not ask them to design their own first? With Scratch fundamental knowledge learned, your kids are able to combine game design theory and techniques with more advanced Scratch programming elements to create games for themselves and for their peers. In this camp, students will learn advanced Scratch functions like scenes transitions, broadcast, blocks creation, etc. They will also learn the fundamentals of digital game design process such as main concept definition, context and environment, rules, play mechanics, etc. Equipped with the power of coding and game design theory, students are all set to develop their own cool games!

**Fees: \$450, early bird \$420. (GST applies)**

### **Your First Arduino Robot (8- 10 years old)**

In this camp, it is very likely that, for the first time, students will build a robot of their own without using LEGO. Instead, they will use Arduino, an open-source platform widely used by students from primary school all the way to universities to make things.

In this camp, students will learn the Arduino fundamentals using a graphic programming interface to avoid the confusing and complex text-based programming. This is a fantastic first step into the robot building and programming on top of this popular platform. Students will understand fundamental ideas about embedded system, learn the necessary components in robots such as sensing, control and action and build a brand new laser balloon shooting game to have fun with their peers! After the camp, students will bring back the complete systems they build in the classroom to play with their peers and continue to learn and practice.

**Students are recommend to bring their own laptops so that it is easier to continue development after the camp.**

**Fees: \$450 + \$50 material fees, early bird \$420 + \$50. (GST applies)**



### **Robot Makers with Graphic Arduino (11 to 14 years old)**

Robots are all about sensors for environment information gathering, control unit as brain for information processing and decision making and action mechanism to execute the decisions from brain. With the powerful Arduino platform, abundant supporting circuit modules and the easy-to-use graphic programming interface, students are all set to start the challenging but fascinating robot making journey. In this camp, students will learn some advanced coding features for Arduino platform and design, build and test prototypes such as Morse code decipher, chameleon, etc. After the camp, students will bring back the complete systems they build in the classroom to play with their peers and continue to learn and practice.

**Students need to bring their own laptops.**

**Fees: \$450 + \$80 material fees, early bird \$420 + \$80. (GST applies)**

### **Python Explorers (10 to 12 years old)**

Python is 2018 'Language of the Year' and one of the top three programming languages chosen by professionals! Python programming is widely used in Big Data Analysis, Artificial Intelligence, Machine Learning and it has always been favoured for its simple syntax and ease of use. Well, it is text-based and students need to key in the commands one by one but come find out how easy it is to understand and learn Python to level up your coding skills! In this camp, students will learn basic syntax and coding structure, how to conduct repetitive tasks using loops, how to branch code based on different decisions. After the camp, students will walk away with the ability to read, analyse and construct simple Python programs and be ready for the next level of development.

**Students need to bring their own laptops.**

**Fees: \$450, early bird \$420. (GST applies)**