



# **COURSE OUTLINE**

## **ROBOTICS AND CODING I**

Age : 6-9 years old

### Introduction

The STEAM Robotic and Coding I Lessons have been developed to engage and motivate children in the early making, piquing their interest in learning design, technology, and engineering. LEGO elements with intuitive block-based coding and standards-aligned lesson plans that make STEAM learning fun and accessible. LEGO bricks, sensors, and motors help students of all levels develop concrete and tangible understanding of abstract concepts.

The lesson plans are designed to build The students' confidence to define problems, ask questions, and design their solutions. The lessons come in a range of challenge levels and cover science, engineering, maker, and computational thinking. students to practice their STEAM and robotics skills in a 'near real-world' environment. Easily adaptable to fit any learning environment.

The teacher's role in these lessons is to provide children with the tools and necessary freedom to connect with and define a problem, make a solution, and share what they have made. Use your creativity to adapt these activities to suit the needs of your children plus giving challenges that supposed to be given to them.

Seq	Lesson	Objective
1	Glowing Snail	<ul style="list-style-type: none"><li>- Build a LEGO model</li><li>- Connect the model and device</li><li>- Program the Smart hub LED to show a flash of light</li></ul>
2	Cooling Fan	<ul style="list-style-type: none"><li>- Build a LEGO model</li><li>- Connect the model and device</li><li>- Program the motor to turn at different speeds</li></ul>
3	Moving Satellite	<ul style="list-style-type: none"><li>- Build a LEGO model</li><li>- Connect the model and device</li><li>- Program the motor to turn for a set amount of time</li><li>- Program the motor to turn the other way</li></ul>



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4	Spy Robot	<ul style="list-style-type: none"><li>- Build a LEGO model</li><li>- Connect the model and device</li><li>- Program the Motion Sensor to detect motion</li></ul>
5	The Science Rover	<ul style="list-style-type: none"><li>- Explore different ways scientists and engineers reach remote places.</li><li>- Create and program Milo the Science Rover.</li><li>- Document how Milo can help you discover a special plant specimen.</li></ul>
6	Motion Sensor	<ul style="list-style-type: none"><li>- Create and program Milo's object-detector arm using the Motion Sensor Input.</li><li>- Document how Milo can help you discover a special plant specimen.</li></ul>
7	Milo's Tilt Sensor	<ul style="list-style-type: none"><li>- Create and program Milo's messaging arm using the Tilt Sensor.</li><li>- Document Milo's communication with the base.</li></ul>
8	Collaborating	<ul style="list-style-type: none"><li>- Create and program a device to move the plant sample.</li><li>- Document and present how Milo's mission went overall.</li></ul>
9	Pulling	<ul style="list-style-type: none"><li>- Explore what forces are and how they can make objects move.</li><li>- Create and program a robot to investigate the effects of balanced and unbalanced forces on the motion of an object.</li><li>- Document and present findings about forces.</li></ul>
10	Speed	<ul style="list-style-type: none"><li>- Explore race car features.</li><li>- Create and program a race car to investigate what factors would make it go faster.</li><li>- Document and present ways to make your car go the fastest.</li></ul>

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11	Robust Structures	<ul style="list-style-type: none"><li>- Investigating what characteristics of a building would help make it resistant to an earthquake</li><li>- Using an earthquake simulator from LEGO bricks</li></ul>
12	Frog's Metamorphosis	<ul style="list-style-type: none"><li>- Explore what you know about the stages in the life cycle of a frog, from birth to adult.</li><li>- Document the changing characteristics of your model throughout different stages of a frog's life.</li></ul>
13	Plants and Pollinators	<ul style="list-style-type: none"><li>- Explore how different organisms take an active role in plant reproduction.</li><li>- Create and program a model of a bee and flower to mimic the relationship between the pollinator and the plant.</li></ul>