



**CHALLENGE**



# Scope and Sequence: 60-Hour Option

Activity	Description	Hours
<b>Robot Skill Learning</b>	<b>LEGO® Education Unit Plans</b> ( <i>options at bottom</i> )	<b>15</b>
<b>Guided Experience</b>	<b>Engineering Notebook: Sessions 1-12</b>	<b>18</b>
Session 1	Robot Lesson 1 and Project Spark 1	1.5
Session 2	Robot Lesson 2 and Project Spark 2	1.5
Session 3	Project Spark 1 and Robot Lesson 1	1.5
Session 4	Project Spark 2 and Robot Lesson 2	1.5
Session 5	Robot Lesson 3 and Pseudocode	1.5
Session 6	Robot Lesson 4 and Choose Problem	1.5
Session 7	Project Research and Robot Lesson 5	1.5
Session 8	Robot Lesson 5 and Project Development	1.5
Session 9	Project Continuation and Solve Missions	1.5
Session 10	Presentation Work and Solve Missions	1.5
Session 11	Prepare Robot and Project Presentations	1.5
Session 12	Practice Presentations and Robot Matches	1.5
<b>STEM Learning</b>	<b>FIRST @ Home Lessons</b> ( <i>listed at bottom</i> )	<b>25</b>
<b>Tournament</b>	<b>Present Solutions and Compete in Matches</b>	<b>2</b>

## LEGO MINDSTORMS® Education EV3 Unit Plans

<u>Robot Trainer</u> (7 Hours)	<u>Engineering Lab</u> (8 Hours)	<u>Coding Activities*</u> (10 Hours)	
<ul style="list-style-type: none"> <li>Moves and Turns</li> <li>Objects and Obstacles</li> <li>Grab and Release</li> <li>Colors and Lines</li> <li>Angles and Patterns</li> <li>The Factory Robot</li> </ul>	<ul style="list-style-type: none"> <li>Trial and Error</li> <li>First Gear</li> <li>Shifting Gears</li> <li>Sliding Down a Slope</li> <li>Free Falling</li> <li>Drive Up a Slope</li> </ul>	<ul style="list-style-type: none"> <li>Autonomous Parking</li> <li>Reversing Safely</li> <li>Automatic Headlights</li> <li>Line Detection</li> </ul>	<ul style="list-style-type: none"> <li>Object Detection</li> <li>Unlocking a Car</li> <li>Cruise Control</li> <li>Roaming Vehicles</li> <li>Autonomous Intersection</li> </ul>

## FIRST @ Home Lessons

Core Values Activities (3 Hours)	Coding Activities (3 Hours)	3D and CAD Activities (3 Hours)
Electronics and Mechanics Activities (3 Hours)	Engineering Design Activities (3 Hours)	Capstone and Additional Activities (10 Hours)