

Introduction to Robotics Rubrics

Students can evaluate their project work according to the learning goals.

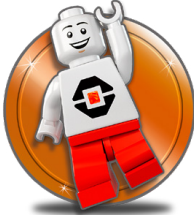



Each rubric includes four levels: Bronze, Silver, Gold and Platinum. The intention is to help students reflect on what they have done well in relation to the learning goals and what they might do better. Students could mark an X to indicate the appropriate rubric level.

You can also use the rubrics for your own evaluation of the students' work, marking your own X in the appropriate column, and adding optional comments in the Notes column.

If a more formative assessment approach is required, you can record grades on the Class Assessment Record sheet provided in the Introduction to Robotics Lesson Plan PDF. The students can retain the assessment rubric sheets as a record of their progress.

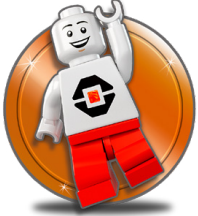






Name(s): _____ **Date:** _____

Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>After completing this lesson, you will be able to build the Driving Base, connect the EV3 Brick to the computer, download and run programs that control the robot's behavior.</p>	<p>I have built the Driving Base and written one program with Sound, Motor or Display text blocks.</p>	<p>I have built the Driving Base and written two programs with Sound, Motor, and Display text blocks.</p>	<p>I have built the Driving Base and written two programs with appropriate Sound, Motor and Display text blocks.</p>	<p>I have built the Driving Base and added extra elements to make an animal. I have also added an animal sound.</p>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

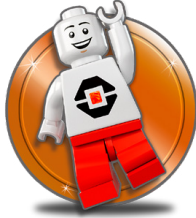




Lesson 2 – Curved Move

Name(s): _____ Date: _____

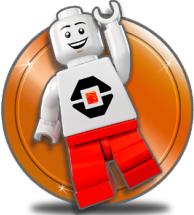

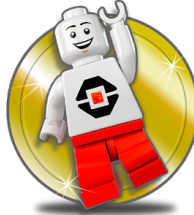
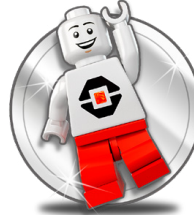

Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>After completing this lesson, you will be able to navigate your robot through an obstacle course. By selecting the correct programming blocks and setting their parameters, you will know how and when to use point turns, single-motor turns, and curved turns.</p>	<p>I have used one type of turn to park my robot in the parking bay.</p> <p><input type="checkbox"/></p>	<p>I have used two types of turn to park my robot successfully in the parking bay.</p> <p><input type="checkbox"/></p>	<p>I have used three types of turn to park my robot successfully in the parking bay.</p> <p><input type="checkbox"/></p>	<p>I have used three types of turn to park my robot accurately in the parking bay.</p> <p><input type="checkbox"/></p>	

Lesson 3 – Move Object

Name(s): _____ Date: _____

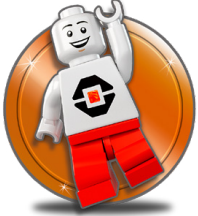




Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>After completing this lesson, you will be able to program your robot to move and release objects of different shapes and sizes.</p>	<p>I have moved and released objects of two different sizes.</p> <p><input type="checkbox"/></p>	<p>I have moved and released objects of three different sizes.</p> <p><input type="checkbox"/></p>	<p>I have moved and released objects of three different sizes, and moved the Cuboid from position 1 to position 2.</p> <p><input type="checkbox"/></p>	<p>I have moved and released objects of three different sizes, and moved the Cuboid from position 1 to position 2 and position 3.</p> <p><input type="checkbox"/></p>	

Name(s): _____ **Date:** _____

Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>After completing this lesson, you will understand the difference between the Change and the Compare Modes of one of the EV3 sensors. This particular lesson features the Ultrasonic Sensor.</p>	<p>I know how to use both the 'Change' and 'Compare' Modes.</p>	<p>I have completed the Lesson Challenge 'a' by moving the Cuboid from position 1 to position 2, and have returned my robot to the start position.</p>	<p>I have completed the Lesson Challenge 'b' by moving the Cuboid from position 1 to position 3, and have parked my robot in position 4.</p>	<p>I have completed the Lesson Challenge 'c' by moving the Cuboid from position 3 to position 1.</p>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

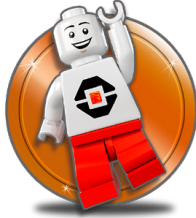




Lesson 5 – Stop at Angle

Name(s): _____ Date: _____

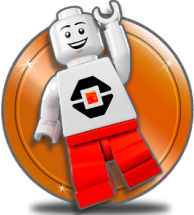

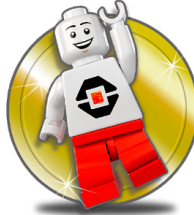
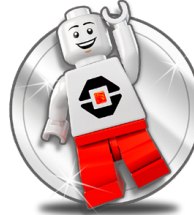

Goals	Bronze	Silver	Gold	Platinum	Notes
Mark the box that best describes how you did.					
Objective: After completing this lesson, you will be able to turn your robot based on input from the Gyro Sensor.	I know how to turn my robot 45 degrees based on Gyro Sensor readings.	I have used the troubleshooting notes to help set the "Threshold Value" for the Gyro Sensor.	I have completed one of the Lesson Challenges.	I have completed two or more of the Lesson Challenges.	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Lesson 6 – Stop at Line

Name(s): _____ Date: _____

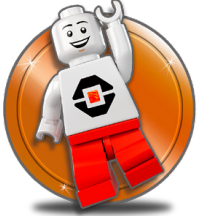




Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>After completing this lesson, you will be able to use the Color Sensor to stop the robot when a line is detected. You will also be able to set a threshold value for a sensor.</p>	<p>I know how to use the Color Sensor to make my robot stop when it detects a black line.</p> <p><input type="checkbox"/></p>	<p>I know how to use the Color Sensor to make my robot stop when it detects a gray line.</p> <p><input type="checkbox"/></p>	<p>I have completed the Lesson Challenge and know how to use the Color Sensor to make my robot stop when it detects a colored line.</p> <p><input type="checkbox"/></p>	<p>I have found out what the “No Color” Parameter does.</p> <p><input type="checkbox"/></p>	

Name(s): _____ **Date:** _____

Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>After completing this lesson, you will be able to use the Switch Block to make dynamic sensor-based decisions that will allow your robot to follow a line.</p>	<p>I know how to use a Switch Block to make my robot follow a line.</p>	<p>I know how to change the Switch Block “Threshold Value” to make my robot follow a lighter-colored or gray line.</p>	<p>I have completed one of the Lesson Challenges.</p>	<p>I have completed two or more of the Lesson Challenges.</p>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

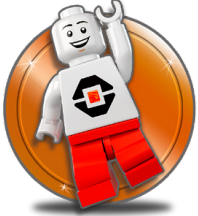




Master Challenge 1 – The Turntable Challenge

Name(s): _____ Date: _____

Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>The goal of this Master Challenge is for you to navigate your robot around a four-bay, turntable style parking area using a combination of point turns and sensors.</p> <p>After completing this challenge, you will be able to use angles to predict the final position of your robot, and to compensate for factors that may affect the accuracy of the Gyro and Color Sensors.</p>	<p>I can use a point turn and the Color Sensor to accurately park my robot in one parking bay.</p> <p><input type="checkbox"/></p>	<p>I can use the Gyro and Color Sensors to accurately park my robot in two of the parking bays.</p> <p><input type="checkbox"/></p>	<p>I can use the Gyro and Color Sensors to accurately park my robot in three of the parking bays. I have also used a Switch Block in my program.</p> <p><input type="checkbox"/></p>	<p>I can use the Gyro and Color Sensors to accurately park my robot in four of the parking bays. I have also used a Switch Block in my program.</p> <p><input type="checkbox"/></p>	

Master Challenge 2 – The LEGO® Factory Robot Challenge

Name(s): _____ Date: _____

Goals	Bronze	Silver	Gold	Platinum	Notes
<p>Mark the box that best describes how you did.</p>					
<p>Objective:</p> <p>The goal of this Master Challenge is to create a simplified version of one of the real-life robots used in LEGO factories around the world.</p> <p>After completing this challenge, you will be able to combine what you have learned in the previous lessons to master the basics of robotics.</p>	<p>I have used the Ultrasonic Sensor to detect and grab the Cuboid.</p> <p><input type="checkbox"/></p>	<p>I have used the Ultrasonic Sensor to detect and grab the Cuboid and I have programmed the robot to drive forward a distance of exactly 84cm.</p> <p><input type="checkbox"/></p>	<p>I have determined the correct angle using the Gyro Sensor and Point Turned the robot to accurately release the Cuboid in the center of the target.</p> <p><input type="checkbox"/></p>	<p>I have used the Color Sensor to locate the line and have combined all programs to stop the robot in front of the object.</p> <p><input type="checkbox"/></p>	