

# ROBOTICS CHALLENGE

## TIJ10 – EXPLORING TECHNOLOGY

Robots can be used in any situation and for any purpose, in the previous lessons you have researched how robots can be used and programed to work in a variety of situations and how they can be used to demonstrate skills and knowledge in other classes that you are taking. (e.g. geography, math....)

Throughout this module you have had the opportunity to build, program and research. In this final summative task, you will use everything you have learned to build and program your robot to complete a course designed by the previous group and by your teacher. You will also have an opportunity to use your mobile device measure and calculate angles that will be programed into your robot.

You will complete against the two other groups to see which groups robot can complete the task in the shortest amount of time.

But before you begin you and your group will need to build unique robot within a specified amount of time.

### TASK: BUILD AND COMPETE

#### Part A:

**Time:** 2 Periods

Design and build a unique robot capable of picking up a block and carrying it to a designated spot before depositing it.

#### Part B:

**Time:** 1 Period

Install on your mobile device (if you do not have one please see me to use one of ours)

Ruler App: <https://play.google.com/store/apps/details?id=net.kosev.rulering&hl=en>

Protractor App: <https://play.google.com/store/apps/details?id=oops.protractor>

You will now program your robot to complete a course designed by the previous group, your robot will be timed on how long it takes to complete the challenge. (group that designs will be the robot challenge winner)

#### Part C:

**Time:** 1 Period

Your teacher will design a course once revealed you and your team will have one period to complete as much of the course as possible.

## RUBRIC

	Level 4	Level 3	Level 2	Level 1	R
<p><b>Navigation</b> A1.3 apply correctly the mathematical and scientific concepts and skills required in the planning and development of a product and/or service;</p>	<p>Goes defined distances efficiently.</p> <p>Turns accurately and consistently.</p>	<p>Turns reasonably accurate and consistent.</p> <p>Allows for variables.</p>	<p>Goes defined distances sometimes</p> <p>.</p> <p>Turns sometimes accurate</p>	<p>Difficulty going same distance on repeated missions.</p> <p>Turns inaccurate or inconsistent.</p>	<p>Does not travel minimum distance</p>
<p><b>Programming</b> A1. demonstrate an understanding of the fundamental concepts and skills required in the planning and development of a product or service, including the use of a design</p>	<p>Programs logically organized.</p> <p>Programs very efficient.</p>	<p>Programs organized.</p> <p>Programs do what they're expected to do.</p>	<p>Programs somewhat organized</p> <p>Programs do some of what is expected</p>	<p>Programs disorganized</p> <p>Programs inefficient</p> <p>Results unpredictable</p>	<p>Programming does not meet the minimum requirements</p>

process and/or other problem-solving processes and techniques;					
<p><b>Time Management</b></p> <p>B1. use problem-solving processes and project-management strategies in the planning and fabrication of a product or delivery of a service;</p>	<p>Used project time constructively to support complex design process, all criteria outlined were met</p> <p>Project finished, finished early, added additional elements with extra time.</p>	<p>Used project time constructively to support complex design process, all criteria outlined were met</p>	<p>Used project time well, all criteria outlined were met.</p> <p>Project finished</p>	<p>Did not use project time as well as possible. Final project was almost but not entirely complete.</p> <p>Project almost finished</p>	<p>Did not use project time well. Project was mostly unfinished</p>
<p><b>Teamwork</b></p> <p>D2.5 demonstrate an understanding of the work habits that are important for success in the technology industries, as identified in the Ontario</p>	<p>Communicates in depth understanding of the subject content for the design and programming.</p> <p>Team understands design, science, and technology</p> <p>Building/programming was done by team members.</p>	<p>Knowledge of robot structure and programming</p> <p>Team shows understanding of design</p> <p>Building/programming mostly distributed equally by all team members</p>	<p>Team knowledge of robot structure and programming</p> <p>All members contribute but distribution of work was primarily done by one or two members</p>	<p>Little evidence of teamwork</p> <p>Building/programming appears primarily done by one or two members</p> <p><b>Note:</b> Achievement at this level will impact assessment of other levels</p>	<p>Does not meet minimum criteria, team members did not work together</p> <p><b>Note:</b> Achievement at this level will impact assessment of other levels</p>

<p>Skills Passport</p>			<p><b>Note:</b> Achievement at this level will impact assessment of other levels</p>		
<p><b>Innovative Design</b> B2.3 meet all design criteria (e.g., technical requirements, type and quality of materials, appearance, ease of use, safety, timeline, client's expectations) in creating a product or delivering a service;</p>	<p>Robot is stable and robust. Robot designed by team, is unique and creative. Communicates complete design process, from initial concept through build, test, and refinement.</p>	<p>Slow robot assembly, with no errors Robot base stable, but not robust. Basic understanding of design process, evidence of conceptual planning, building, testing, refining of robot, manipulators, programs.</p>	<p>Robot assembly done with few errors. Robot base structure has some stability. Robot show signs of fore thought in initial design.</p>	<p>Difficulty with robot assembly during challenge Base weak, falls apart when handled or run.</p>	<p>Does not meet minimum criteria</p>