

DATE:		LOCATION	
11 April 2023		NSCC Akerley Campus	
TIME	TASK		
3:00 PM – 5:00 PM	Technical Inspection; <ul style="list-style-type: none"> Teams can arrive at any time from 4:00 PM until 6:00 PM for a technical inspection; and This inspection is mandatory, and teams must attend an inspection before being permitted to compete. 		

DATE:		LOCATION	
12 April 2023		NSCC Akerley Campus	
TIME	TASK		
7:00 AM	Doors open; <ul style="list-style-type: none"> Teams are welcome to set up and practice before the heats begin; and Any teams that have not had a technical inspection must do so at this time. Please note, time will be extremely limited to make any modifications to the robot. 		
9:00 AM	Heats start		
12:00 PM	Lunch (Provided)		
3:00 PM	Mobile Robotics contest ends		
TBD	Closing Ceremonies & Medal Presentation		

2. Purpose of the Contest

To create engineering projects to encourage individuals with different skill sets to form co-operative teams to design, fabricate, and operate a robot or multiple robots. The intent of the challenge is to have teams of students independently designing/fabricating/operating robots capable of completing the competition tasks in competition with other student-fabricated robots. Teams are not allowed to develop or implement strategies based on interfering with their opponent's ability to complete the competition task set.

3. Criteria

- Communication;
- Collaboration;
- Adaptability;
- Reading;
- Problem Solving; and
- Creativity and Innovation.

4. Number of Stations / Allocations

There is a maximum of twenty-four (24) spaces available, for a total of 12 teams.

Please note:

- There is no limit to the number of students who can help to build the robot, however, only a team of two (2) students will represent their group the day of the contest and be permitted on the play field;
- Schools must be pre-registered to secure their spot in the competition. Early registration opens online at [2024 Early Registration – Mobile Robotics – Form – Skills Canada Nova Scotia \(skillsns.ca\)](https://skillsns.ca).

Early Registration runs from October 23, 2023 – November 17, 2023.

- Representing students must individually register online during the general competition registration. A link will be provided to pre-registered schools once registration opens.
General competition registration runs January 8, 2024 – February 23, 2024.

5. Skills & Knowledge to be Tested

- Drafting;
- Mechanics;
- Electronics;
- Metalwork;
- Woodworking; and
- Communications.

6. Prerequisites

SCNS Prerequisites

- Attend a public or private recognized secondary institute, or be enrolled in a registered home school program through the Nova Scotia Department of Education and Early Childhood Development (EECD);
- Be between 13 and 21 years of age on January 1 of the year of the Competition. Competitors are responsible for verifying this information, if requested.

SCNS Prerequisites continued...

- Have been earning junior or senior high school credits any time during the current academic year (September to June);
- Be registered as a competitor with Skills Canada – Nova Scotia;
- Possess Canadian citizenship or Landed Immigrant status and be a resident of Nova Scotia; or be a registered International Student. Competitors are responsible for verifying this information, if requested;
- Have completed and submitted a signed release form by a parent or guardian if under the age of 19.

7. Equipment & Clothing

Equipment and material provided by Skills Canada Nova Scotia

- Exclusive use playing fields for each team's game and evaluated robot experiences; and
- One worktable with access to a 120 V power outlet (minimum 100 W) per team.

Equipment and material provided by the Competitor

- Robot(s) that meets the Pre-inspection for Compliance with Safety and Design Rules;
- Robot accessories (including controller(s), batteries, battery charger, spare parts, etc.);
- Toolbox(es) with various tools required to modify and repair robot(s) on site;
- 25-foot multi-outlet extension cord/power bar;
- Pre-inspection checklist;
- Wiring diagram;
- Safety Data Sheet for batteries and other chemicals found on the robot(s);
- Laptop(s); and
- Safety Equipment including non-open toed footwear and mandatory eye protection.

Competitor toolboxes must not exceed 64 cubic feet (1.81228 m³) in volume. It can be multiple toolboxes, but the total of all toolboxes must not exceed the maximum volume indicated. There is no exception to this rule. If the competitor toolbox is larger than what is indicated, the Competitor with the guidance of the PTC, will need to remove items from the toolbox and those items will not be used during the competition. All tools must fit inside one or more toolboxes. Tools outside of a toolbox will not be permitted.

8. Evaluation & Judging Criteria

POINT BREAKDOWN	/ 100
General Inspection, robot construction, and plans <ul style="list-style-type: none"> • Construction quality; • Safety (both electrical and mechanical); and • Planning and drawings; 	/25
General tasks, robot driving/control and robot functionality. Robots earn points during the competition round robin for performing certain tasks that would be common to the action in the competition. Examples are below: <ul style="list-style-type: none"> • Move forward and backward; • Turn both left and right; and • Shoot the balls. 	/25
Each game of the round robin will be worth two (2) points for a win, one (1) point for a draw, and zero (0) points for a loss. <ul style="list-style-type: none"> • Scoring for the matches is outlined in the Contest Project; • Depending on the number of teams, it will be a double round robin or a single round robin; • There will be no playoffs; and • Winning the competition will not guarantee winning the overall championship. 	/25
Points will be awarded for professional conduct during the competition: <ul style="list-style-type: none"> • No teams will be awarded points for repeating functions; and • Each team will be awarded points based on sportsmanship, team comradery, and decorum. 	/25
TOTAL	/ 100

Match scoring will occur at two (2) levels, an individual match level and a complete competition level. The individual match scoring will determine the winner of the round and how many points are earned at the complete competition level.

Ties in individual games are allowed, however no ties in overall mark totals are allowed. If a tie in the overall marks occurs, the tie will be broken by examining and comparing the following individual mark categories against the teams that tied in this order:

- Round Robin results;
- General Inspection;
- General tasks; and
- Professional Conduct.

9. PTC Contact Information

Name	Employer	Email
Kyle Denney (PTC Chair & National Technical Committee Rep	Royal Canadian Navy	kyledenney@live.ca

Pre-Inspection for Compliance with Safety and Design Rules

- Mandatory Wiring Diagram provided;
- Tabletop Robot Stand(s);
- Overall volume less than or equal to 4 ft³ or 6,912 in³;
- No explosives/combustibles;
- No lasers;
- All batteries are sealed commercial batteries in good physical condition;
- Batteries wired in series should be the same amp hour rating (ex. both 1500 mAh) and batteries in parallel are of same voltage (ex. both 12 volts);
- Batteries securely mounted;
- Material Safety Data Sheets available for all batteries
- Total voltage in any individual circuit does not exceed 24 V;
- No circuit **branch** exceeds 240 W (Voltage x Fuse Current Rating, easily accessible);
- All circuits have a fuse or breaker (breakers must have **DC rating**) and all Fuses/Breakers must be readily accessible;
- Mandatory Pressure System Circuit Diagram provided;
- No Competitor-made or modified air pressure hardware being used;
- Only commercially manufactured Pressure Tanks (cylinders) can be used;
- Pressure indicator;
- Pressure in tanks does not exceed 100 psi;
- Over-pressure safety valve;
- Pressure tanks and related gauges and controls are shielded from damage due to collisions;
- **Robot(s) can be turned off with a single motion.** Radio receivers / Logic circuits may be independent of the kill switch;
- Control unit to support operator to robot communication are being used; and
- Demonstration of robot functionality.

Additional Concerns: _____

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Robot Evaluator Signature

Team Representative Signature