
2016 HALTON SKILLS COMPETITION

Robotics and Control Systems (Team of 2)

Held At: Robert Bateman High School

April 5th, 2016

Coordinator

Mr. C Brooks-Prenger, HDSB (brooksprench@hdsb.ca)

PURPOSE OF COMPETITION

The purpose of this competition is to provide competitors with the opportunity to demonstrate skills in engineering, science, and technology through a series of challenges involving Mechanical Systems, Electronics, Controls and Sensor, Automation, Mobile Robotics and Programming. These skills will be judged on a practical demonstration of abilities to complete a series of challenges that will draw from fundamentals of Robotics, Automation and Control.

SKILLS AND KNOWLEDGE TO BE TESTED

- General Electrical and Mechanical Knowledge
- Basic knowledge of Robotics, Pneumatics, Sensors, and Electrical Systems
- Interpret and use electronic, electrical or mechanical schematics
- Understand wiring, layout and graphical programming

COMPETITION FORMAT

Each team of two students will be given a series of tasks to perform. The teams are given 1 to 2 hours to complete each task. The tasks require the appropriate documentation, wiring, layout and programming.

Strategies used to solve the problem, teamwork, overall robotics knowledge and personal representation are graded in the contest. Each team will have ten minutes to present their solution to the problem and their Resolution Notebook to the judge(s).

EQUIPMENT AND MATERIALS

Thanks to the generous contributions of Studica to this contest, all teams, upon registering their students, will receive a Robotics Kit, including:

- NI myDAQ - Student - With NI LabVIEW, NI Multisim, & NI Ultiboard
- mySTEM™ Board for NI myDAQ
- mySTEM Robotics and Control Systems Kit
- Sample instructions for basic models and concepts



The Robotics Control System Kits for use during their competition preparations will be provided only to new schools. Returning schools can use their 2014/15 kit (the kit has not changed). **Mailing address must be sent to coordinator to receive your kit.**

COMPETITORS MUST PROVIDE:

- Robotics Kit as provided by Studica
- Computer(s) with the required software pre-installed on it
- Resume
- USB Stick to save files
- One extension cord
- One power bar

Media devices, such as cell phones, smart phones, mp3 players or PDAs are not permitted on the contest site.

PROJECTS

Competitors will be using Labview for education to control and program all tasks. Examples of the various challenges are as follows:

A simple elevator (two switches and a motor), a solar or light tracker (two photocells, motor, worm gear and turn table). A fan, thermistor and light combination that involves temperature control, an automatic sliding door, and a welding or mobile robot.

JUDGING CRITERIA

Judge: Ali Langari

The competition will be judged on the following criteria:

Assembling	15%
Programming	25%
System functionality	30%
Modifications, extra features & troubleshooting	15%
Presentation and Design Notebook	10%
Job Interview	5%
Total	100%

Ties: If the score is tied after the contest, the results from the final challenge will be used as the tie breaker.

JOB INTERVIEW

To assist competitors in preparing for their eventual job searches there is a “job interview” incorporated into this contest. It is expected that the competitors will arrive WITH A RÉSUMÉ and be prepared for interview questions and discussion. Performance in the interview accounts for 5% of the individual’s/team’s overall mark.

Sample interview questions and a scoring breakdown are available at www.skillsontario.com/hr.

Please note there are no facilities on site for printing.