

2022 POST-SECONDARY PROVINCIAL SKILLS CANADA COMPETITION



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ELEVATE.



Contest Description

Edmonton Expo Centre, Edmonton

May 4 & May 5, 2022

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---------------|-------------|----------------|-------|-----------------|-------------|----------------|-------|---------------|-------------|---------------|--|-------------|----------------|-------|-----------------|-------------|-----------------|-------|-----------------|-------------|----------------|
| EVENT: Industrial Control | LEVEL: Post-Secondary | | | | | | | | | | | | | | | | | | | | | | |
| WORLDSKILLS TRADE #: 19 | LOCATION: Hall C, Edmonton Expo Centre, Edmonton | | | | | | | | | | | | | | | | | | | | | | |
| DURATION: 12 hrs. (Two Days) | | | | | | | | | | | | | | | | | | | | | | | |
| COMPETITION SCHEDULE: | | | | | | | | | | | | | | | | | | | | | | | |
| May 4: | May 5: | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>ORIENTATION</td> <td>8:00AM-9:00AM</td> </tr> <tr> <td>COMPETITION</td> <td>9:00AM-11:45AM</td> </tr> <tr> <td>LUNCH</td> <td>11:45AM-12:45PM</td> </tr> <tr> <td>COMPETITION</td> <td>12:45PM-3:00PM</td> </tr> <tr> <td>BREAK</td> <td>3:00PM-3:15PM</td> </tr> <tr> <td>COMPETITION</td> <td>3:15PM-4:15PM</td> </tr> </table> | ORIENTATION | 8:00AM-9:00AM | COMPETITION | 9:00AM-11:45AM | LUNCH | 11:45AM-12:45PM | COMPETITION | 12:45PM-3:00PM | BREAK | 3:00PM-3:15PM | COMPETITION | 3:15PM-4:15PM | <table border="1"> <tr> <td>COMPETITION</td> <td>8:00AM-10:00AM</td> </tr> <tr> <td>BREAK</td> <td>10:00AM-10:15AM</td> </tr> <tr> <td>COMPETITION</td> <td>10:15AM-11:45AM</td> </tr> <tr> <td>LUNCH</td> <td>11:45AM-12:30PM</td> </tr> <tr> <td>COMPETITION</td> <td>12:30PM-3:00PM</td> </tr> </table> | COMPETITION | 8:00AM-10:00AM | BREAK | 10:00AM-10:15AM | COMPETITION | 10:15AM-11:45AM | LUNCH | 11:45AM-12:30PM | COMPETITION | 12:30PM-3:00PM |
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Please Note: Due to the uncertainty caused by COVID 19, the PSCC could be subject to change at any time based on the public health context. This document is subject to change as competition information is updated. Competitors are responsible for staying up to date with the most recent information. Check the footer for last updated date. Changes will be highlighted in yellow.

CONTEST INTRODUCTION

Description of the associated work role(s) or occupation(s).

<https://www.skillscompetencescanada.com/en/skills/construction/industrial-control/>



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Purpose of the Challenge

Install and program an industrial control system

Duration of contest

12 hours

Skills and Knowledge to be tested

Designing, installing, and commissioning of an automated process using a Programmable Logic Controller (PLC).

THE ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

Skills Competencies Canada is currently working with Employment and Social Development Canada (ESDC) in order to bring awareness to the importance of Essential Skills that are absolutely crucial for success in the workforce. Part of this ongoing initiative requires the integration and identification of Essential Skills in contest descriptions, projects, and project documents. The next phase and very important aspect of our Essential Skills (ES) initiative is to provide an ES report card to each competitor at the *Skills Canada National Competition*. The purpose of the ES report card is to inform the competitor about their current level of essential skills based on their competition scores. With this knowledge, the competitor will be made aware which essential skill may require improvement. Full implementation is expected in the next *Skills Canada National Competition*.

The following 9 skills have been identified and validated as key essential skills for the workplace in the legend below:

¹Numeracy, ²Oral Communication, ³Working with Others, ⁴Continuous Learning, ⁵Reading Text, ⁶Writing, ⁷Thinking, ⁸Document Use, ⁹Digital

CONTEST DESCRIPTION

Tasks that may be performed during the contest

- Interpreting and using electrical designs, diagrams and a process flow chart to assemble a functional control system.⁸
- Installing various industrial cables and raceways to a wall mounted control panel.
- Programming a PLC, to meet project requirements.⁹
- Installing and commissioning terminal components (push buttons, limit switches, pilot device, etc.)¹
- Wiring a panel using standard trade practices, complying with relevant sections of the Canadian Electrical Code.⁵
- Determining adequate protection for equipment, components and personnel.⁷



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- Diagnostic and fault finding on actual project. ⁷
- Proper Occupational Health and Safety procedures

Prerequisites

- Knowledge of the current Canadian Electrical Code. ⁵
- Ability to effectively locate information in technical documents. ⁸
- Effective troubleshooting techniques. ⁷
- Ability to install various industrial cables and raceways.
- Knowledge of symbols used in an electrical diagram and a control diagram. ⁸
- Proper layout, installation practices and techniques for a control panel.
- Knowledge of fail safe designing.
- Knowledge of safety practices in the work environment.
- Knowledge of PLC programming. ⁹
- Effective use of allotted time ⁷

*Essential Skills, ¹Numeracy, ⁵Reading Text, ⁷Thinking (Problem Solving, Job Task Planning and Organization),
⁸Document Use, ⁹Digital*

EQUIPMENT, MATERIAL, CLOTHING

Equipment and material provided by Skills Canada Alberta (SCA)

- All required materials to assemble the project
- Conduit Bender
- Cordless Drill
- Power bar
- Step Ladder

**COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCA.
ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA IF NOT PRE-APPROVED.**

Equipment and material provided by the Competitor

- Programmable Logic Controller, communication cable and software. Laptop computer with appropriate operating system and PLC software. Computer & PLC need to be free of all pre-programmed PLC files. Computer will be inspected by the Provincial Technical Committee (PTC) prior to usage.
- The PLC must have the following minimum requirement:
 - 120 VAC power will be provided to supply the Enclosure
 - 24 Volt DC Inputs and Outputs



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- Fit into a space 250mm high x 250mm deep x 500 mm wide
 - 16 - Inputs
 - 16 -Relay Outputs
 - Internal Battery (if applicable)
 - PLC technical documents/manuals will be permitted provide they are free of additional notes and writings and contain only original manufacturer's information.
 - Additional backup PLC (Recommended)
- DC Power Supply (120VAC:24VDC) (if required for competitors PLC)
 - Multimeter
 - Complete set of pliers (diagonal cutting, needle nose, electrician's, terminal crimper, slip-joint type)
 - Complete set of screwdrivers (Phillips, Robertson, Slotted or Standard)
 - Level(s)
 - Wire strippers
 - Electrician's knife (utility knife not allowed)
 - Metric measuring tape
 - Ruler, straight edge, and/or T-square
 - Metal saw (Hack saw-recommended 32TPI) & mitre-box/vise
 - Flat and round metal file with handle
 - Hammer
 - Centre punch
 - Set of metal drill index
 - Knockout punches and/or carbide hole saw (22 mm) or Unibit
 - Full compliment of screwdriver tips for cordless drill (short & long including nut drivers)
 - Set of termination screwdrivers (slotted)
 - Adjustable wrench
 - Allen keys (metric and imperial)
 - Any additional tools are subject to approval from Provincial Technical Committee Chair prior to competition start.
 - No additional power tools and no pre-fabricated templates allowed.

Required clothing provided by the competitor.

- Proper work site clothing (no shorts allowed)
- Long sleeves are recommended for the installation portion of the project



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SAFETY REQUIREMENTS

Safety workshop

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

List of required personal protective equipment (PPE) provided by Competitor.

- Safety Glasses with side shields
- CSA approved Safety Shoes
- Protective Gloves (high dexterity)
- Hearing protection
- Hard Hat
- Lockout Hasp for Main Disconnect

ASSESSMENT

| POINT BREAKDOWN | /100 |
|----------------------------------|------|
| Measurements | 20 |
| Wiring & Components Installation | 42 |
| Functionality | 30 |
| Safety practices | 8 |

Tie (No ties are allowed)

- Tiebreaker #1: The Competitor with the highest score in the Wiring & Workmanship will be declared the winner.
- Tiebreaker #2: The Competitor with the highest score in the Functionality will be declared the winner.
- Tiebreaker #3: The Competitor with the highest score in the Installation Measurements will be declared the winner.

Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, PTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.



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ADDITIONAL INFORMATION

Skills Canada Alberta Regional and Provincial Rules and Regulations

[Regional and Provincial Rules and Regulations](#)

Competitors must be prepared to adhere to all public health measures in place at the time of the PSCC.

Lunch

Lunch for competitors will be provided by Skills Canada Alberta.

Parking & Venue Maps

<http://edmontonexpocentre.com/attend/parking/>

Competitor Registration

Competitor Registration for the PSCC will take place on Tuesday May 3, 2022 from 9:00am-6:00pm outside Hall B of the Edmonton EXPO Centre. Please note you will be required to present your COVID-19 proof of vaccination.

Virtual Awards Ceremony

The Virtual Awards Ceremony will take place **Friday, May 6th at 6:30pm**. A link will be made available on the website with additional information prior to the ceremonies.

Team Alberta Information

Team Alberta (Post-Secondary) will be selected at the PSCC happening on May 4 - May 5, 2022. Top eligible medalists will compete at the Skills Canada National Competition (SCNC) May 24-28, 2022 in Vancouver, BC. It is recommended that competitors review the SCNC contest description to be familiar with the national contest description and project at <http://www.skillscanada.com/>.

If a competitor is not able to attend the SCNC, competitors MUST notify Katherine Kupchenko katherinek@skillsalberta.com prior to the start of competition. If a gold medalist is not able to attend the SCNC, the next top-ranking individual will be asked to participate.

Questions?

Please contact Whitney Koop whitneyk@skillsalberta.com if you have any questions regarding the Contest Description.



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COMMITTEE MEMBERS

Ben Cooney – SAIT

Ken Bodell - Caribou Electric (Retired)

Neil Schlosser – NAIT – Co-Chair

Peter Friesen – NAIT

Zack Hartle – SAIT - Chair

