Skills Compétences Canada











CONTEST DESCRIPTION

Industrial Control

POST-SECONDARY

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1 THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

The Government of Canada has updated the previous Essential Skills framework to the new Skills for Success model in response to the evolving labour market and changing skill requirements. This model outlines nine fundamental skills Canadians need to thrive in work, education, training, and daily life.

Skills/Compétences Canada aims to highlight the importance of these skills, vital for success in trade and technology careers. Competitors can see how Skills for Success are integrated into contest descriptions, projects, and project documents. Recognizing these skills during the competition helps competitors match tasks with specific skills necessary for success and understand how these skills apply within their trade or technology programs and future careers.

The nine key Skills for Success, validated for workplace success, are:

1. Numeracy
2. Communication
3. Collaboration
4. Adaptability
5. Reading
6. Writing
7. Problem Solving
8. Creativity and Innovation
9. Digital

These Skills for Success are detailed in sections 2.4 and/or 3.2 (to be completed by SCC) of your Contest Description and, if relevant, in your Project and supporting documents.

2 CONTEST INTRODUCTION

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

https://www.skillscompetencescanada.com/en/skill_area/industrial-control/

2.2 Purpose of the Challenge

Install and program an industrial control system.

2.3 Duration of contest

12 hours (7 hours on the first day and 5 hours on the second day with a lunch break each day). There may be a break(s) given at the discretion of the NTC.

2.4 Skills and Knowledge to be tested.

Designing, installing, and commissioning of a sequential process using a PLC device.

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents on the Skills/Compétences Canada website.

DOCUMENT	DATE OF DISTRIBUTION
Test Project (Posted Version)	December 2026
Safety Orientation document	December 2026
Commissioning Procedure	December 2026
Components data sheet and manuals	January 2027
Evaluation guide	February 2027

3.2 Tasks that may be performed during the contest.

- Interpreting and using electrical designs, diagrams and a process flow chart or functionality description text to assemble a functional control system.[5]
- Installing various industrial cables and raceways to a wall mounted control panel.
- Programming a programmable logic controller – PLC, to meet project requirements.[9]
- Installing and commissioning terminal components (push buttons, limit switches, pilot devices, etc.)[1,7]
- Wiring a panel using standard trade practices, complying with relevant sections of the Canadian Electrical Code.[5,7]
- Applying adequate protection for equipment, components, and personnel.[7]
- Diagnostic and fault finding on actual project.[7]
- Proper Occupational Health and Safety procedures.

Pre-Requisites

- Knowledge of the current Canadian Electrical Code.
- Ability to effectively locate information in technical documents.[5]
- Effective troubleshooting techniques.[7]
- Ability to install various industrial cables and raceways.
- Knowledge of symbols used in an electrical diagram and a control diagram.[5]
- 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]
- Knowledge of supplied VFD, motors.

- Effective use of allotted time[1]

Skills for Success - [1]Numeracy, [5]Reading, [7]Problem Solving, [9]Digital

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada

- Step Ladder
- Power bar and 6' extension cord
- Sawhorse equipped with mitre box and a clamp
- Cordless Drill and/or electrical screwdriver
- Carbide hole saw kit
- Appropriate complement of screwdriver tips for Cordless Drill (including hex head self-tapping screws driver bits)
- 6" & 3" Square #2 Robertson & #2 Philips Driver Bit + 4" 3mm flat driver bit
- Small magnet and Cordless vacuum (for metal shaves & cleaning inside of panel)
- All required materials to assemble the project

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

4.2 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-programed PLC files**. Computer will be inspected by the National Technical Committee (NTC) prior to usage.
  The PLC must have the following minimum requirement:
  - Both 120Vac and 24Vdc power will be available to supply the PLC; competitor must use the appropriate source.
  - Fit into a space 150mm high x 150mm deep x 250 mm wide
  - 16x - 24VDC Inputs
  - 16x - Relay Outputs
  - 2x – Analog input 0-10VDC
  - 2x – Analog output 0-10VDC

Note: Additional backup PLC (Recommended), smart relay is not recommended.

- Any technical documents/manuals (pdf or paper) will be permitted provide they are free of additional notes and writings and contain only original manufacturer information.

- Multimeter
- Complete set of pliers (diagonal cutting, needle nose, electrician's lineman's, sta-kon crimper, slip-joint gripping)
- Complete set of screwdrivers (Phillips, Robertson, Flat-headed)
- Set of termination screwdrivers (slotted)
- Small terminal screwdriver (make sure you have proper size for your PLC)
- Level(s)
- Wire/Cable Strippers
- Electrician's knife (Utility Knife not allowed)
- Metric measuring tape
- Ruler and Square
- Metal Saw (Hack saw – recommended 32TPI)
- Flat and round metal file with handle
- Hammer and centre punch
- Knockout Punches (allowed)
- Step drill "Unibit" (allowed, but not recommended for metal holes)
- Ferrule crimper – Manual or Automatic – Ferrules Strips provided by NTC
- Head mounted or magnetic light
- Adjustable wrench and/or ratchet kit
- Small brush and dustpan (For cleaning inside of panel)
- Manual din rail cutter(optional)
- Finger duct (Panduit) cutter
- Electric Screwdriver allowed
- Any additional tools are subject to approval from National Technical Committee Chair prior to competition starts.
- No additional Power Tools and no prefabricated templates allowed.

4.2.1 Toolboxes Guidelines

One of the objectives of SCC is the sustainability of the Competition. As a result, the toolboxes brought by Competitors will be restricted to the following maximum specifications.
The Competitor toolbox must not exceed 1 meters^3 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 NTC, 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.

4.3 Required clothing provided by <u>the competitor.</u>

- Proper work site clothing (no shorts allowed)

- Long sleeve is required
- 100% cotton shirt suggested for commissioning (day 2 only)

5 HEALTH AND SAFETY

5.1 Safety program

SCC has implemented a comprehensive safety program as health and safety is an integral part of our competitions. Our safety program includes guidelines and procedures to make the work environment in each skill area safer.

5.1.1 Safety manual

As part of our program a safety manual has been created to monitor and document health and safety within each skill area. It includes a definite plan of action designed to prevent accidents. The safety manual will be provided for every skill and these instructions must be followed and respected by all participants and officials at the SCNC.

5.1.2 Safety workshop

During orientation, 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.

5.2 List of required personal protective equipment (PPE) provided by Skills/Compétences Canada

- Hearing protection (plugs)
- Arc Flash rated lab coat for commissioning

5.3 List of required personal protective equipment (PPE) provided by the competitor.

- Safety Glasses with side shields
- CSA approved Safety Shoes
- Protective Gloves (high dexterity)
- Electrical safety gloves
- Lockout tagout padlock – See the safety documentation for proper lockout tagout
- Hard hats
- 100% cotton shirt on day 2 for power up commissioning (or must use the lab coat)

Note: Competitors who do not have the required protective equipment will not be allowed to participate in the competition

5.4 Commissioning procedure

- The safety Orientation and commissioning procedure documents will be posted prior to the contest. Please make sure to read and understand those rules and procedures.
- The commissioning procedure must be completed in order to power up the control panel.

6 ASSESSMENT

6.1 Point breakdown

Note: This list is subject to change.

TASKS	/100
Installation Measurements	20
Wiring & Workmanship	42
Functionality	30
Safety	8

7 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during the competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Communication with people outside competition area	Competitors will not be allowed to talk to anyone outside of the competition area during the competition times. Also, competitors will not be allowed to talk to other competitors about any aspects of the competition during the competition times. Please do not talk about the competition during lunch breaks.
Personal property	Tools, material, laptops, paperwork, etc. will not be allowed to be introduce nor removed from competition area until the competition is finished.
Tool lending	If a competitor willingly lends his tools to another competitor, they will not be caused prejudice.
Computer verification	All laptops will be checked and will remain onsite. No pre-programmed software or PLC logic will be allowed.
Documentation	Physical or digital copies of technical documentation (such as Code Books, PLC Manuals) must be clear of notes and will be checked.
Day 1 scoring	Judging of all externally mounted wall and panel components will be completed after the first day of competition. Please ensure this work is completed by the end of the first day. The wiring associated with these

	components will NOT be judged at that time. Each competitor will be asked to leave is measuring tools on top of his cabinet at the end of the first day of competition (such as their measuring tape and level). All components with a measurement must be installed in order to be scored.
Heavy Lifting	Should a competitor need assistance to lift a heavy weight, such as installing their back plate into their panel, an NTC member will assist as necessary.
Programming time	To start programming, a competitor must have completed his commissioning procedure. Unless a competitor is waiting for comissioning evaluation, programming may be started.
Demo Station (if applicable)	At any time during the competition, the competitor may have a look at the demo station. To open the control panel, it must be disconnected from power. No competitor will be allowed to interact with the demo on day 1 (look only). Also, time spend looking at the demo will be part of the competition time.

8 ADDITIONAL INFORMATION

8.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service may not be guaranteed.

8.2 Ties

- 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.

8.3 Test Project change at the Competition

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

8.4 Competition rules

Refer to the competition rules of the Skills Canada National Competition which can be found on our website.

9 NATIONAL TECHNICAL COMMITTEE MEMBERS

MEMBER ORGANIZATION	NAME
Newfoundland and Labrador	
Prince Edward Island	Scott Zwicker- Co-Chair
New Brunswick	Éric Arseneau
Quebec	Éric Beaumier
Ontario	John Sousa
Saskatchewan	Devon Young- Chair
Alberta	Peter Friesen
British Columbia	Clarence Burlock
Nova Scotia	John Harding

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Olga Malvine Rwemera (olgamr@skillscanada.com).