Skills Compétences Canada











CONTEST DESCRIPTION

Electronics

POST-SECONDARY

SkillsCompétences Canada
Calgary2027

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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/electronics/

2.2 Purpose of the Challenge

To evaluate each competitor's skills and to recognize outstanding students for excellence and professionalism in the field of Electronics Technology.

2.3 Duration of contest

12 hours

2.4 Skills and Knowledge to be tested.

The contest will cover the theoretical and practical aspects of current state of the art electronic industry standards. The competitor may be asked to demonstrate abilities in the following areas:

- Interpret electronic schematic diagrams, pictorials, manufacturers technical specifications and suppliers' web sites.[5]
- Identify common electrical and electronic components.[7]
- Construct, analyse and troubleshoot DC circuits including series resistance, parallel resistance, series-parallel resistance and switching circuits.[7]
- Construct, analyse and troubleshoot AC circuits including capacitive, inductive and complex RLC circuits.[7]
- Construct, analyse and troubleshoot analog circuits including discrete amplifiers, operational amplifiers and comparator circuits.[7]
- Construct, analyse and troubleshoot digital circuits including TTL/CMOS gates, timers and optical devices.[7,9]
- Apply the appropriate test equipment to a given situation.[7]
- Interpret the observed values from the test equipment. (AC/DC voltages, currents and waveforms and circuit resistance)[1]
- Identify basic systems of analog to digital and digital to analog conversion.[1]
- Interface to a microcontroller
- Program a microcontroller[9]
- Use of electronic design and simulation software.[9]

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

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
Project	December 2026
Declaration of Major Components	February 2027

3.2 Tasks that may be performed during the contest.

- Hand - solder through-hole and/or surface mount components on a printed circuit board to acceptable industry standards.
- Hand – de-solder through-hole and/or surface mount components on a printed circuit board.
- Assemble a circuit from a kit of parts PCB.[7]
- Assemble a circuit from a kit of components on a breadboard.[7]
- Set-up and demonstrate use of common electronic measuring equipment including multimeters, power supplies, frequency generators and oscilloscopes.[1]

- Troubleshoot simple electronic circuits having a preinstalled fault and restore to a working order.[7]
- Reverse engineer a simple electronic circuit.[7]
- Capture a given schematic and layout a PCB using through-hole and/or surface mount footprints using electronic CAD.[5]
- Design, breadboard, and test electronic circuits[7,9] that: Amplify and condition signals from common sensors, control low power loads such as small motors, LEDs, speakers, process inputs and provide desired outputs program and interface a microcontroller to typically encountered devices e.g., switches, keypads, leds, SPI/I2C devices

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

- Oscilloscope c/w accessories (minimum 40MHz)
- Digital Multimeter c/w test leads
- Power Supply
- Waveform Generator c/w BNC to alligator cables
- Lead free Solder will be supplied. Please consult the additional notes for exact type.
- PC/Solder cleaning solution with accessories (Flux Remover)
- Project wire (22 Guage Solid)
- Additional equipment specific to the competition
- Projects, electronic components, and documentation

4.2 Equipment and material provided by the competitor.

- Soldering Iron suitable for through hole and surface mount soldering. Also suitable for use with lead free solder. Stand, Tip cleaner, tips of choice. (Both Post-Secondary and Secondary competitors) Butane solder devices will not be allowed.
- Flux, liquid or paste (these can be flux pens)
- De-solder braid
- Hand vacuum solder extractor (Non-heated)
- Three sets of test leads (banana jack with alligator clips)
- Long nose pliers
- Side Cutters
- Wire Stripper (No Automatic Devices Permitted)
- Screwdrivers (including precision set)
- Utility knife (exacto-knife)
- “Third Hand” including magnifying glass. (optional)
- Magnifier

- Power bar, 4 or more outlet (minimum 3'/1m or more cord length and must be CSA approved)
- Pens, Pencils, Eraser, Ruler
- Safety Glasses with side shields or Goggles
- 2 breadboards, minimum size each, 2"x 6" (wire will be supplied)
- Desk Lamp (can include a magnifier)
- Stand-alone calculator non-Programmable. Example TI-30Xa
- Stand-alone personal music player during some sessions of the competition. The sessions where music is allowed will be determined by the judges.
- Safety glasses with side shields or goggles must be worn when soldering, de-soldering and circuit assembly. Failure to comply with this regulation may result in disqualification from the competition at the discretion of the NTC members on site.
- Electronic CAD software. Competitors will use KiCAD. The competitor can use an evaluation version for the competition. This should be pre-installed and verified by NTC prior to the competition.
- Laptop with admin rights, capable of running simulation design software. Competitors will use Arduino IDE for the Embedded Controller portion of the competition. This should be pre-installed and verified by NTC prior to the competition.

It is the responsibility of each competitor to supply the tools and supplies listed here. Failure to supply the required tools and supplies may result in competitor not being allowed to participate.

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 0.128 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 the competitor.

- Competitors are to be dressed in a clean and safe manner (long pants and closed toe shoes)
- No jewellery on hands or wrists.

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

- n/a

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

- Safety Glasses with side shields or goggles

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

6 ASSESSMENT

6.1 Point breakdown

Note: This list is subject to change.

TASKS	/100
Fault Finding	25
Schematic entry and PCB Design and Layout	25
PCB Assembly and Testing	25
Analog Design & Embedded System Programming and interfacing	25

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
Safety	Competitors must wear their safety glasses with side shields or goggles when soldering, de-soldering and circuit assembly. Failure to comply with this regulation may result in disqualification from the competition at the discretion of the National Technical Committee (NTC) members on site.
Use of technology - music	Competitors are allowed to listen to music through headphones or earbuds. The sessions where music is allowed will be determined by the NTC.
Tools/ Infrastructure	Competitors are responsible to supply the aforementioned tools and supplies. Failure to bring the required tools and supplies may result in competitor not being allowed to participate.

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: In the event of a tie, the competitor with the highest mark in the PCB Assembly and Testing criteria will be declared the winner.
- Tiebreaker #2: If a tie still exists, the competitor with the highest mark in the PCB Design and Layout criteria will be declared the winner.
- Tiebreaker #3: In the event of a third tie, the competitor with the highest mark in the Analog Design & Embedded System Programming criteria 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	Kelly Spencer – Chair
Ontario	Randy Gallant
Manitoba	Coutney Dietrich
Saskatchewan	Craig Skihar
British Columbia	Adam Drake – Co-Chair
Nova Scotia	Frederick Boutilier
Yukon	

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