Skills Compétences Canada

CONTEST DESCRIPTION

Precision Machining

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/precision-machining/

2.2 Purpose of the Challenge

Assess the contestant's precision machining skills and trade knowledge through practical testing at the post-secondary level.

2.3 Duration of contest

7 hours

2.4 Skills and Knowledge to be tested.

The contest will occur over two days. The contest will consist of 7 hours of practical machining. The contest involves machining a project using a conventional engine lathe and a conventional vertical milling machine.

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 (Drawings)	December 2025

3.2 Tasks that may be performed during the contest

Conventional Engine Lathe may include:

- External and internal cylindrical turning
- External and Internal threading
- Grooving (external and/or internal)
- Applied metrology[1,9]
- Assembly of parts[5]
- Knurling
- Taper turning (external and/or internal)
- Associated calculations[1,9]
- 3 Jaw or 4 Jaw chuck

Conventional Vertical Milling Machine may include:

- Conventional vertical milling
- Drilling, Reaming, C/sink, C/bore and Tapping[7]
- Pocket milling
- Use of offset boring head
- Applied metrology[1,9]
- Form Milling (dovetails, T-Slots, corner rounding, etc.) including calculations[1]
- Assembly of parts[5]
- Associated calculations[1,9]

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

The dimensioning system or equipment may be metric or imperial (Dependant on machine availability).

Competitors may be required to share supplied tools and equipment (dependant on availability)

- All cutting tools
- May include, Low carbon steel
- May include, Brass
- May include, Bronze
- May include, Aluminum
- Each contestant will be supplied with the material to complete one lathe and one milling machine project.
- Machine may or may not be equipped with DRO (digital readout)
- 6" or 8" Slip joint pliers or needle nose pliers
- 6-8 inch digital caliper
- 0 to 4 inch micrometers
- Depth micrometers
- Thread pitch micrometers

4.2 Equipment and material provided by the competitor.

Competitors will not be allowed to use their own cutting tools

- Steel rule
- Scriber
- Dead-blow hammer or Brass hammer
- Center gauge
- File, needle files, file card and or deburring tools (no abrasives permitted)
- Metric and inch hex keys
- 12 inch adjustable wrench
- Set of feeler gauges
- Dial indicators-magnetic (back and/or magnetic base)
- Dial test indicator
- Edge finder
- Parallel set
- Adjustable parallel set
- Telescoping gauges
- Machinist’s Ready Reference/Machinery’s Handbook (optional)
- Other reference material (optional)
- Scrap paper
- A scientific / machinist calculator (optional)
- Thread pitch gauge and thread wires

- Solid square
- Protractor
- Felt marker
- Flashlight

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 the competitor

- Shop coat or equivalent (optional)

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

- Ear Protection (optional)

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

- CSA approved safety shoes
- Safety glasses

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	Turning	Milling
Compliance with occupational health and safety regulations	5	5
Compliance with dimensions, tolerances and fits as specified in plan Compliance with appropriate surface finish and deburring	95	95

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
Use of technology - personal laptops, tablets and mobile phones	• Competitors are not allowed to bring personal laptops tablets or mobile phones into the skill area. • National Technical Committee (NTC) members, Interpreters and judges are allowed to use personal devises in the skill area
Drawings, recording information	• Competitors, Interpreters, NTC members and or judges are not permitted to take drawings or recorded information out of the skill area until conclusion of the Competition Day 2
Tools / Infrastructure	• Competitors are required to use micrometers and calipers supplied by Skills/Compétences Canada

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 overall surface finish will be declared the winner.
- Tiebreaker #2: The competitor with the highest score in the external thread form and finish will be declared the winner.
- Tiebreaker #3: The competitor with the highest score in the internal thread form and finish 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
Nova Scotia	Zack Chaisson
Quebec	Serge Fleury
Ontario	Brock Holborn – Chair
Manitoba	Daniel Wiens
Saskatchewan	Emmet Jacklin
Newfoundland and Labrador	Harrison Tilley
Alberta	Graham Greenhall – Co-Chair
British Columbia	David Peare
New Brunswick	Curtis Yeomans
Prince Edward Island	Brett MacKay

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve (nathaliem@skillscanada.com).