Skills Compétences Canada

2021 SKILLS CANADA VIRTUAL NATIONAL COMPETITION

CONTEST **DESCRIPTION**

Precision Machining

POST-SECONDARY

Table of Contents

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

SCC 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:

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

These essential skills have been identified in section 2.4 and/or 3.2 of your Contest Description and if applicable, in your Project and all other supporting project documents.

2 CONTEST INTRODUCTION

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

http://skillscompetencescanada.com/en/skills/manufacturing-engineering/precision-machining/

2.2 Purpose of the Challenge.

Assess the contestant's precision machining skills and trade knowledge through practical testing.

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.

- All competition documents will be posted as they are ready for distribution

- Assessment Process
- Project
- Cutting tool list
- Material list

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[8]
  - Knurling
  - Taper turning (external and/or internal)
  - Associated calculations[1]
  - 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[8]
  - Associated calculations[1]

Essential Skills – [1]Numeracy, [7]Thinking (Critical, Decision Making), [8]Document Use, [9]Digital Skills

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and/or material provided by the competitor and/or the host facility.

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

- Machine may or may not be equipped with DRO (digital readout)
- All cutting tools (list will be provided on the website)
- 6-8 inch digital caliper or equivalent
- 0 to 4 inch micrometers or equivalent
- Depth micrometers or equivalent
- Thread pitch micrometers or equivalent
- All contestants are responsible for the correct calibration and use of all measuring equipment
- May include, Low carbon steel
- May include, Brass

- May include, Bronze
- May include, Aluminum
- Each institution will supply the material to complete one lathe and one milling machine project.
- 6" or 8" Slip joint pliers or needle nose pliers
- Brass hammer
- Steel rule
- Scriber
- Dead-blow 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

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT LISTED ABOVE. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

4.2 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 in order 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 in order 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 Personal protective equipment (PPE) provided by the competitor

- CSA approved safety shoes
- Safety glasses
- Ear protection (optional)

5.3 COVID-19 Protocol

The final COVID-19 guidelines will be shared with participants closer to the event.

The COVID guidelines already in place within the participants' jurisdiction would take precedence to the below protocol.

The following are suggested COVID-19 protocols that might be in place for the duration of the competition. It is the responsibility of the participants (Competitor, Proctors, NTC members, and anyone onsite during the competition) to ensure that the COVID guidelines are respected.

- Participants to complete and sign electronically a self-screening form at the beginning of each day of the competition. If a competitor is showing any symptoms, they might not be allowed to participate in the competition.
- Participants will be assigned a workspace in which they must remain at for the duration of the competition.
- Participants to ensure a minimum of 2m physical distancing from others at all times.
- Participants entering the competition space must use hand sanitizer provided at each entrance/exit.
- Participants to wipe work surfaces (e.g. desks, tables, and chairs) and objects (e.g. headsets, keyboards, equipment) with antibacterial wipes before and after use.
- Face covering as per the local health authority requirement.

6 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 competitors orientation.

TOPIC/TASK	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, Proctors, Interpreters and judges are allowed to use personal devises in the skill area

7 ADDITIONAL INFORMATION

7.1 Interpreter

If a competitor requires the help of an interpreter 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 might not be guaranteed.

7.2 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.

7.3 Competition rules

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

8 NATIONAL TECHNICAL COMMITTEE MEMBERS

MEMBER ORGANIZATION	NAME
Ontario – Chair	Jeff Oskam
Saskatchewan	Emmet Jacklin
Prince Edward Island – Co-Chair	Ken Muirhead
Nova Scotia	Zack Chaisson
New Brunswick	Bob Doucet
British Columbia	David Peare

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