



2018

SCNC

SKILLS CANADA
NATIONAL COMPETITION

OCMT

OLYMPIADES CANADIENNES
DES MÉTIERS ET
DES TECHNOLOGIES


skillsCompétences
Canada
Edmonton2018

CONTEST DESCRIPTION / DESCRIPTION DE CONCOURS

CNC MACHINING USINAGE CNC

POST - SECONDARY /
NIVEAU POSTSECONDAIRE



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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:

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

These essential skills have been identified with in section 2.3 and/or 3.2 of your Contest Description. The top three Essential Skills for your area of competition have been identified on your Project and all other supporting project documents.

2 CONTEST INTRODUCTION

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

<http://skillscompetencescanada.com/en/skills/manufacturing-engineering/cnc-machining/>

2.2 Purpose of the Challenge.

Assess the contestant's CNC machining operational skills and techniques utilizing CNC equipment and CAD/CAM software.

2.3 Duration of contest.

2 days – 3 to 4 hours per day.

2.4 Skills and Knowledge that may be tested.

The contest involves manufacturing a precision component using a CNC turning centre and a CNC Vertical Machining centre.

- Reading and Interpreting engineering drawings⁸
- Manually and/or digital programming Computerized Numerical Control machine tools⁹
- (Turning Centre) May include external and internal turning, taper turning, threading, drilling, boring, face grooving and applied metrology.¹
- (Machining Centre) May include pocketing, profiling, drilling, reaming, tapping, chamfering, thread milling and applied metrology¹

Essential Skills - ¹Numeracy, ⁸Document Use, ⁹Digital

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents.

DOCUMENT	DATE OF DISTRIBUTION VIA WEBSITE
No other competition document will be released prior to the competition	

3.2 Tasks that may be performed during the contest

- Interpret engineering drawings and follow the specifications ISO A (American) drawing representation⁸
- Identify and designate the different machining processes on a CNC machine
- Select and apply appropriate cutting technology according to the cutting parameters, the material, equipment and cutting tools
- Setup and utilize CAD/CAM software⁹
- Generate G-Code
- Setup a Operate CNC Equipment
- Select appropriate measuring tools or gauging instruments and use them correctly⁷
- Make accurate measurements using precision measuring tools¹
- Inspect and maintain the accuracy of dimensions within the tolerances

Essential Skills - ¹Numeracy, ⁷Thinking (Decision Making), ⁸Document Use, ⁹Digital

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada.

- CNC Machining Centre (Haas) – <http://www.hasscnc.com/>
- CNC Turning Centre (Haas)
- Cutting Tools and Holders (Sandvik) - www.sandvik.coromant.com/
- All raw material (one part per competitor)
- Gauges, measuring instruments
- Parallels/soft blow hammers/wrenches/vices/deburring files
- Computers and Mastercam software
- Micrometer digital 0-100 mm
- Digital Caliber digital 0-200 mm
- Depth Micrometer digital 0-100 mm
- Thread micrometer digital 25-50 mm
- Test Dial indicator and base
- Edge finder
- Telescoping Gauges
- Thread pitch gage metric

4.2 Equipment and material provided by the competitor.

- Non programmable calculator/machinist calculator
- Machinery's Handbook/Machine manual (optional)
- No other tools allowed

4.3 Required clothing provided by the competitor.

- Long pants (no shorts allowed)
- Short sleeve shirt
- Shop coat with rolled up sleeves (optional)

5 SAFETY REQUIREMENTS

5.1 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 or 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 the competitor.

- Safety Glasses
- CSA approved safety shoes
- Hearing protection (optional)

Note: Competitors will not be allowed to compete if the above items are not brought and used.

6 ASSESSMENT

6.1 Point breakdown

POINT BREAKDOWN	/100
Compliance with occupational health and safety regulations	5
Compliance with dimensions, tolerances, and surface finish specified in plans for Milling	45
Compliance with dimensions, tolerances, and surface finish specified in the plans for Turning	45
No additional part (material) per competitor. One piece per person	0
If a failure of a tool occurs as a result of a competitor's negligence, a loss of – 2.5 per tool will be deducted.	- 2.5
Practical set-up procedure for Turning Centre	2.5
Practical set-up procedure for Milling Centre	2.5

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 competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Use of technology – digital memory devices	<ul style="list-style-type: none"> Competitors are not allowed to bring digital memory devices into the workshop.
Use of technology – personal devices	<ul style="list-style-type: none"> Competitors are not allowed to bring personal laptops, tablets or cellphones into the workshop.
Drawings - recording information	<ul style="list-style-type: none"> Competitors are not permitted to take drawings or recorded information out of the workshop.
Tools/infrastructure	<ul style="list-style-type: none"> Competitors are not allowed to bring their own tools and measuring instruments. Competitors are not allowed to change the machine or computer parameters/settings. The competitor may use a different CAM system but must take the responsibility of insuring proper operation, which may include post processor, technical support, computer hardware/software and CNC connections, etc. You are not allowed to advertise any other system.
Equipment failure	<ul style="list-style-type: none"> If equipment or tools supplied by Skills/Compétences Canada fail, extra time will be allowed only if the Technician of the sponsor or supplying company specifies and proves it is not a “user error”.

8 ADDITIONAL INFORMATION

8.1 Consecutive translation

If consecutive translation is required on site, 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.

8.2 Software requirements

- If French software is required the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 3 month prior to the competition or this software might not be guaranteed.
- The competitor may use a different CAM system but must take the responsibility of insuring proper operation, which may include proper working post, technical support, computer hardware/software and CNC connections etc. You are not allowed to advertise any other system.

8.3 Tie (No ties allowed)

In the event of a tie, the competitor with the highest score in the Compliance with dimensions, tolerances, and surface finish specified in plans for Milling criteria will be declared the winner. If a tie still remains, the competitor with the highest score in the Compliance with dimensions, tolerances, and surface finish specified in the plans for Turning will be declared the winner. If a third tie occurs, the competitor with the highest score in the Compliance with occupational health and safety regulations criteria will be declared the winner.

8.4 Competition rules

Please refer to the [competition rules](#) of the Skills Canada National Competition.

9 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name
British Columbia - Chair	Marte Arreola
Manitoba	Rob Ataman
Ontario	Jurgen Hierholzer
New Brunswick	Greg Currie
Saskatchewan	Phil Ursulescu
Nova Scotia	Kimball Edwards
Prince Edward Island	Jeff Bowser
Alberta	Trevor Fandrick

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Olympe Guihede (olymp@skillscanada.com).