



17TH ONTARIO TECHNOLOGICAL SKILLS COMPETITION

CNC MACHINING - SECONDARY and POST-SECONDARY LEVEL

CHAIR: Lou Dropka, Conestoga College

**** Gold medal winners will advance to the Canadian Skills Competition**

POST-SECONDARY REGISTRATION INFORMATION:

All competitors and advisors must check in at the Conestoga College – Guelph Campus contest site between the hours of 6:00AM and 6:30AM, **Monday April 24, 2006**. At this time, the students will be divided into two groups. The campus is located at:

460 Speedvale Ave W

Guelph, Ontario

N1H 6N6

SECONDARY REGISTRATION INFORMATION – 2 Day Contest – May 1-2, 2006

Competitors are required to be registered at RIM Park and Manulife Financial Sportsplex between 7:00 - 7:30 am on **Monday May 1, 2006**. The shuttle will depart RIM Park and Manulife Financial Sportsplex at 7:30am to leave for Conestoga College – Guelph Campus, where the contest will take place. Orientation will commence upon arrival at the college. Competitors will have this time to familiarize themselves with the equipment. The competition will start at 9:00 am. sharp and run until 4:00 pm. There will be a lunch break between 12:00-12:30. This schedule will also apply to the second day of competition on **Tuesday May 2, 2006**.

SAFETY REQUIREMENTS:

- CSA Safety approved glasses and footwear
- Competitors are required to follow all industry safety standards during the competition

Contestants may bring the following optional items:

- Shop coat
- Ear plugs

* Competitors will not be allowed into the competition area without the required safety equipment.

PURPOSE OF CHALLENGE:

Assess the contestants CNC Programming and Machining skills and trade knowledge through practical testing.

SKILLS AND KNOWLEDGE TO BE TESTED:

The secondary level contest will occur over 2 days (12 hours of competition) and the post-secondary level will occur over 1 day. Contestants will manually write a CNC Turning Centre and Machining Center program using standard international word address code (i.e. 'G' and 'M' codes). This program will be generated WITHOUT the use of CAM software. Following the generation of the word address program each contestant will machine the Projects.

Practical Skills and Knowledge:

Manually write a CNC milling and turning program may include using the following:

- Word address programming
- External and Internal Cylindrical Turning
- Taper Turning (external)
- Profile (pocket) milling
- Drilling and tapping canned cycles
- Grooving
- Determine the safe and appropriate sequence of machining operations
- Applied metrology
- Threading

Note:

1. The OKUMA CNC Turning Centre and Machining Centre will have the appropriate tooling and tool length information established prior to the start of the competition.

THEORETICAL ORIENTATION:

- 15 minutes consultation
- 15 minutes safety orientation

EQUIPMENT & MATERIALS:

Supplied by Committee

The following will be supplied to each contestant:

- appropriate measuring tools for the project.
- appropriate tooling for CNC machines.
- Hand tools
- Thread measurement using rollers
- Predator Simulation Software is available in CAM Room

Supplied by Competitor

Contestants may bring the following optional items:

- Measuring tools- Limited to internal/external micrometers, Dial Vernier, rule, scribe.
- Machinery Handbook/Ready Reference

Project Materials

- Mild Steel

Each contestant will be supplied with sufficient work piece blanks for the CNC Project.
Each contestant will be supplied with a maximum of two work piece blanks for the lathe and mill.

Note: If a second work piece blank is required the contestant will lose 150 marks of the 750 mark section.

JUDGING CRITERIA:

	Mill	Lathe
- Project completion	50	50
- Compliance with Occupational Health and Safety regulations	50	50
- Compliance with dimensions, tolerances and fits as specified in plans	750	750
- Compliance with appropriate surface finish and deburring	100	100
- Job Interview	50	50
	1000	1000
	Total 2000	

Instructions:

1. NO TALKING BETWEEN PARTICIPANTS WILL BE PERMITTED. QUESTIONS ASKED MUST BE ADDRESSED TO COMPETITION ADJUDICATORS. FAILURE TO COMPLY WILL RESULT IN REMOVAL FROM THE COMPETITIVE.
2. Make parts 1 and 2 to the shape and dimension shown on the accompanying drawings.
3. These parts should fit together when completed and detailed in the assembly view.
4. Your examination number should be stamped on each piece of your works.
5. The total working time of 10 hours (for post-secondary) and 12 hours (for secondary) may not be exceeded.
6. All surfaces must be finished turned or milled
7. Untoleranced dimensions ± 0.010 "
8. Brake all sharp edges.
9. Emery cloth may NOT be used.

POST SECONDARY TIME TABLE:

6:30 – 7:00	Orientation and Consultation
7:00	Competitors and advisors on the floor (competitor benches, tools, equipment, machine allocation, material and contest blueprints will be given out at this time)
7:00-8:00	Manual Programming in CAM Room (1 hour)
8:00-10:00	Competition (2 hours)
10:00-10:10	Break
10:10-12:00	Competition (2 hours)
12:00	Project will be collected by competition adjudicators
12:00-12:10	Quick clean up of machines
12:10-12:30	Lunch

12:30	Competitors and advisors on the floor (competitor benches, tools, equipment, machine allocation, material and contest blueprints will be given out at this time)
12:30-1:30	Manual Programming in CAM Room (1 hour)
1:30-3:30	Competition (2 hours)
3:30-3:40	Break
3:40-5:30	Competition (2 hours)
5:30	Project will be collected by competition adjudicators
5:30-6:00	Clean up machines

SECONDARY TIME TABLE:

For both days:

8:00 – 9:00	Orientation and Consultation
9:00	Competitors and advisors on the floor (competitor benches, tools, equipment, machine allocation, material and contest blueprints will be given out at this time)
9:00-10:00	Manual Programming in CAM Room (1 hour)
10:00-12:00	Competition (2 hours)
12:00-12:30	Lunch
12:30-3:30	Competition (2 hours)
3:30	Project will be collected by competition adjudicators
3:30-4:00	Clean up machines

JOB INTERVIEW:

To assist competitors in fully preparing for their eventual job searches and to become valued employees, there will be a **5 minute** job interview worth 5% of the competitor's overall mark incorporated into this contest. It is expected that the competitors arrive prepared WITH A RÉSUMÉ and be ready for interview questions related to the technical career path their contest reflects. Feedback from the interview will be given to competitors in order to help them prepare for real-life job interviews.

COMMITTEE MEMBERS:

Louis Dropka	(Committee Chair)	Conestoga College
Fred Fulkerson		Waterloo C.D.S.B.
Wayne DeJong		Fanshawe College