

## Competition Guidelines

### **Competition: PRECISION MACHINING TECHNOLOGY**

#### **Purpose:**

To develop and evaluate each student's preparedness for employment in the metalworking field. To recognize those individuals who are outstanding in organizational, performance, and cognitive skills and those who maintain an attitude of professionalism.

#### **Clothing Requirements:**

All contestants will be required to supply their own safety glasses or goggles and work shoes. All contestants must wear a short sleeved shirt or have their sleeves rolled up above the elbow. No contestant may wear short pants or pants with holes or tom sections. It is recommended that each student bring a shop apron (not required). No student may wear anything identifying the school in which they represent.

#### **Eligibility:**

Open to active SkillsUSA members enrolled in vocational programs with entry-level skills as the occupational objective.

#### **Safety Requirement:**

All contestants must observe each and every standard machine shop safety practice dictated by OSHA and individual shops alike. Contestants will be judged on their ability to observe and implement proper safety habits and procedures.

#### **Equipment and Materials:**

##### **Supplied by host school:**

- Bridgeport Vertical Milling Machines & Accessories
- Clausing Colchester 15" Lathes & Accessories
- Floor Model Drill Press
- Assorted drill bits for contestant choice
- Coolant and cutting oil

- Work benches and assorted hand tools (hammers, wrenches, files)  
(Recommend all contestants familiarize themselves with controls prior to day of contest)

### **Supplied by Contestant:**

- Machinery's Handbook
- 0-1" and 1-2" Outside Micrometers
- 0-1" Depth Micrometer
- 0-6" Vernier/Dial Caliper
- 6" Rule
- 6" or 12" Combination Set
- Universal Dial Test Indicator
- Scriber and Dykem Blue L) Edge Finder
- Center Gage
- 8-32 tap, 1/4-20 tap, 5/16-18 tap, 3/8-16 tap
- 5/16 square tooling (HSS) pre-ground for turning, facing, 60 degree threading, and grooving
- 3/8" 4-flute endmill, 3/8" 2-flute endmill, 1/4" 2-flute endmill 2 - #3 centerdrills.
- Scientific Calculator
- Several #2 pencils

### **Skill/Test**

Each contestant will be required to demonstrate abilities in a variety of machining operations and their understanding of CNC code program information.

Each contestant will be evaluated on SkillsUSA knowledge and skill specific technical knowledge through the use of written examinations.

In the event of a tie, the judge(s) will use the results of the SkillsUSA knowledge written examination as a tiebreaker tool. If both contestants score the same on the VICA exam, an additional skill demonstration will be used for the tiebreaker.

**You will have two and a half hours to complete the Competition!**

### **Evaluation Criteria:**

#### **Orientation 10 minutes**

The proctor will provide a 10 minute overview of the test components, workstations, procedures, rules, and safety factors. Each contestant should visit the equipment, have an understanding of the operations,

## **VICA 05 Turning**

location of the contest. Contestants should ask questions prior to beginning the contest. Any questions or concerns during the contest should be addressed directly through a proctor of the contest.

**General Knowledge Written Test - 20 points - 20 minutes**

As a workstation combined with the CAM/CNC Code Programming Test, the General Knowledge Written Test is a (20) question multiple choice technical examination that should consume no more than (20) minutes of time. Contestants must use the answer sheet provided in their packets.

**Conventional Turning Performance Test - 60 points - 120 minutes**

Using the information and specifications provided on the SkillsUSA TURNING blueprint, the contestant will create a process plan and manufacture as much of the given product as possible within the (60) minute time limit. Contestants are to use the blank process planning sheet forms provided in their packets. Proper safety practices must be followed at all times.

**Conventional Milling Performance Test -60 points - 120 minutes**

Using the information and specifications provided on the SkillsUSA MILL blueprint, the contestants will create a process plan and manufacture as much of the given product as possible within the (60) minute time limit. Contestants are to use the blank process planning sheet forms provided in their packets. Proper safety practices must be followed at all times.

**CAM/CNC Code Programming Test - 30 points - 30 minutes**

Given the SkillsUSA CAM PLATE blueprint. The contestant will complete the provided fill-in-the blank CNC Code Program Sheet using the supplied options sheet for code choices. The contestant must determine coordinates and axis information as needed.

**Total = 170 points - 5 hours**