
**DSBN REGIONAL MECHANICAL CAM (COMPUTER AIDED MANUFACTURING) SKILLS
CHALLENGE 2020
SECONDARY LEVEL SCOPE**

CHAIR: David Hunter, Technological Design Instructor, Eden High School
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PURPOSE OF THE CONTEST:

To test the skill and knowledge of each student in the area of computer numerical programming using a computer-aided manufacturing software application package. This competition will be focused on creating a program for a vertical spindle milling machine.

EVENT DETAILS:

Date: Wednesday, March 4, 2020

Time: 9:00 am - 2:30 p.m

Location: Eden High School, Room 148

SKILLS AND KNOWLEDGE TO BE TESTED:

The participant will receive a detail drawing of a part that will have to be programmed for a vertical spindle milling machine. The part will be held on a simple plate fixture using shoulder bolts to secure the part.

The participant will have to create the part using two-dimensional geometry construction methods and then create the 2D tool paths.

The part will contain the following functions and procedures:

- Selection of the appropriate cutters
- Determine feeds & speeds
- Face Milling
- Rough and finish pockets
- Rough and finish contours

SAFETY REQUIREMENTS:

Competitors are required to follow all industry safety standards during the competition.

EQUIPMENT, MATERIALS, TOOLS, AND SUPPLIES:

Equipment Supplied by the Contest Coordinator:

- Computer
- MasterCAM Software

Equipment Supplied by the Competitor:

CLOTHING REQUIREMENTS:

Casual business attire must be worn with DSBN Technology SKILLS Tees wherever possible.

PROJECT AND COMPETITION EXPECTATIONS:

1. Create CAD drawing with dimensions, printer drivers loaded on incoming computers.
2. Create Toolpath with CAM software, selecting from a list of tools.
3. The material type will be provided.
4. Students will be judged on the following:
 - Time to complete overall competition
 - CAD drawing accuracy and detail
 - Accuracy of part
 - Machining time
 - How the part looks
 - Cutter Selection
 - Cutter feeds and speeds
 - Specific toolpath strategies, depth of drilled holes, retract distances, etc..as per mark sheet
 - Toolpath types including contouring, pocketing, drilling and engraving

JUDGING CRITERIA:

Students will be assigned a number to identify their work. Judges results will be emailed and awards will be forwarded as soon as they are known. Judging to be done by an industry specialist.

ENTRY AND ELIGIBILITY:

Students must register completely through the DSBN Tech Website (<http://teched.dsbnet.org/skills/registration/secondary-registration>). Teachers will also send a list of participants for their school to the attention of David Hunter, Eden High School, by phone, fax, email, or courier. Deadline for this is 7 school days prior to the contest. Two students per school, as selected by the instructor and they must be enrolled in a Manufacturing Technology/Technological Design course or related Co-Op during the school year.

TEACHER'S ROLE:

Instructors are expected to acquaint their student participants with all of the enclosed guidelines. Teachers may accompany their students or visit any time during the competition, but may not assist the competitors during the challenge.

TRANSPORTATION:

Students will provide their own transportation.

COMPETITION AGENDA:

9:00 - 9:15 Introductory Remarks - David Hunter

9:15 - 12:00 CAM Skills Testing

12:00 - 12:30 Lunch Break

12:30 - 2:30 CAM Skills Testing

Notes:

1. Students may take short breaks at any time during the day.
2. Student work must be saved at frequent intervals to the required destination.
3. If CAM project is not completed by 2:30 p.m., more time will be considered.

GOOD LUCK AND HAVE FUN!!