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**DSBN REGIONAL MECHANICAL CAM (COMPUTER AIDED MANUFACTURING)  
SKILLS CHALLENGE 2021  
SECONDARY LEVEL SCOPE**

**CHAIR:**

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**PURPOSE OF THE CONTEST:**

To test the skill and knowledge of each student in the area of computer numerical control 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:** March 1 to 12, 2021

**Time:** 4 hour period

**Location:** @ home or Individual Schools

## **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 and SUPERVISION**

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

## **EQUIPMENT, MATERIALS, TOOLS, AND SUPPLIES:**

- Computer
- MasterCAM Software (If student is competing from home and does not have a software or a system contact organizers to see if a system can be borrowed)

## **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 and appropriate views.
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 INSTRUCTION:**

Students will be assigned a number to identify their work.

1. When submitting a file use only the competitor number and file identifier.
2. Submit completed files to [ryan.vanderkooy@dsbn.org](mailto:ryan.vanderkooy@dsbn.org) and [dave.hunter@dsbn.org](mailto:dave.hunter@dsbn.org)

## **JUDGING CRITERIA:**

Judging criteria will be included in the instruction package.

## **ENTRY:**

Students must register online at <http://teched.dsbn.org/skills> with all of the required information completed to be eligible to participate.

## **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