CNC 3-Axis Milling Programmer

Revised 1/13

Date	February 10, 2024	**Orientation Time**	8:30 AM (CLOSED to instructors)
Location	Sinclair Community College 444 W. Third St., Dayton, OH Building 11 Room 141	**Contest Time**	Immediately Following Orientation (CLOSED contest)
Scope of Contest	This competition will assess the ability to program CNC milling machines and interpret prints (including GDT). Competitors will also demonstrate knowledge of CNC machine configuration, setup, and operations. **Prior to competition:** Each student should first create a 3D model of the print located at the end of this document. • After completing the model the student should use the model to create tool paths in the cam software of their choice. • After successfully posting the code student should then create a tooling list, process plan, and a set up sheet. • The student should then use all the materiel that they have made to make the part on machines at their facility. • The student is to produce printed copies of the tooling list, process plan, set up sheet, nc program, and 3D model. • Student should have the finished part with them as well on the day of the contest. • The part and files will be inspected by the judges day of competition. **At competition:** Competitors will present their part and printed files to the judge(s) and should be prepared to answer questions. Competitors will perform a g & m code programming exercise and will have access to a part drawing, operation sheet, tooling list and an NC code template file. The NC code template file is incomplete, and it is the competitor's job to use provided documents to complete this NC code file so that if run, the program would produce a machined part that is accurate to the part drawing provided. The drawing will be complete with multiple views making it easy for competitors to visualize the part and understand its geometry. The operation sheet will provide a sequence for each operation as well as basic tooling information and instruction.		
Testing	No		
Eligibility	1 contestant for every 50 paid members enrolled in program		
Clothing	Work Attire: Field specific work clothing required for the work environment or that matches the service conditions for the contest. This may include jeans if they are clean and professional looking and are accepted in the respective field (no holes or overly soiled pants). Work shoes or boots with a hard sole or anti-slip properties (steel toes may be required – refer to **Provided by Contestant** section below). Clothing should be as such that it will not get caught in moving equipment or power tools. School uniforms may be worn if they meet the above requirements with all identifiers covered.		

<table>
<tr><td>Provided by Contestant</td><td colspan="2">• Professional Resume – must be typed and physically produced as a hard copy.
• Emergency Medical Form (Contestants must have this to compete)
• Pen or Pencil
• Haas Simulator or Laptop, or computer with access to text editor (I,e Note pad or Word Pad).
• Non-programmable calculator
• NEW – Part manufactured at competitor’s facility and printed copies of all elements listed under Prior to Competition section in Scope of Contest above.

<u>Provided at site</u>: Hard copy of resource materials to use during contest, plain paper for notes and calculations.

<u>Disqualifications</u>: Cell phone in competition area, smart watches.</td></tr>
<tr><td>Contest Standards</td><td>Contest Skilled Performance Standards

CNCM 1.0 - Apply basic machining skills per industry standards as set forth by the technical committee.

CNCM 2.0 - Demonstrate knowledge of CNC programming per industry standards as set forth by the technical committee.

CNCM 3.0 - Perform mathematical calculations as needed for calculating speeds, feeds, program coordinates, angles, radii and tangent points.</td><td>Aligned ODEW Manufacturing Career Field Technical Content Standard Outcomes

Outcome 6.1 Measurement and Interpretation

Outcome 6.2 Layout and Planning

Outcome 6.3 Cutting

Outcome 6.9 Computer Numerical Control (CNC)

Above Outcomes can be found in the following ODEW courses:

176006 Machining with Industrial Milling Machines

176007 Computer Numerical Control Technology with Industrial Mills and Lathes</td></tr>
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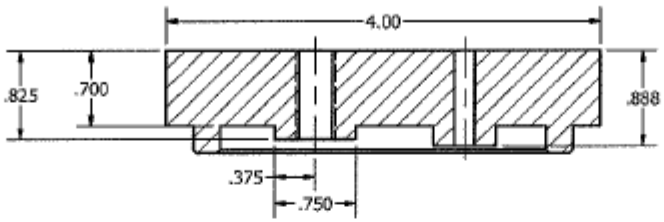
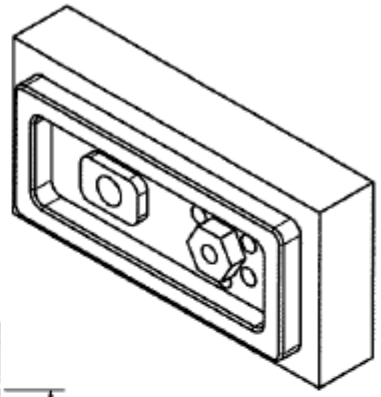
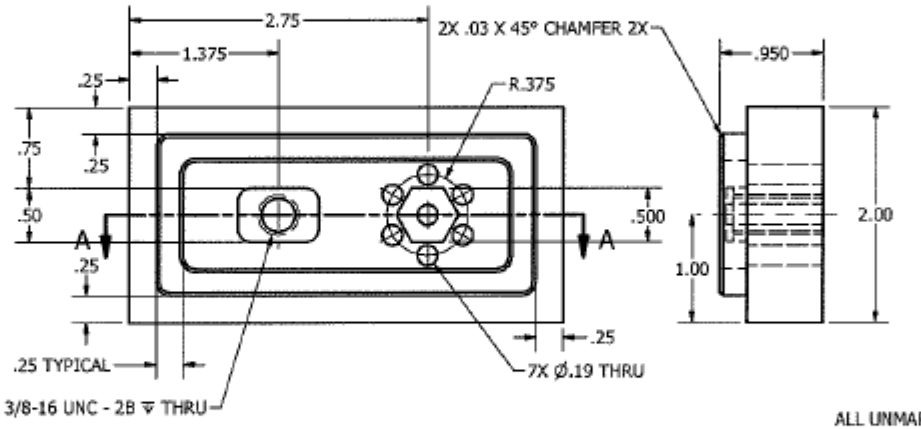
SECTION A-A
SCALE 1 : 1







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TOLERANCE (EXCEPT AS NOTED) DECIMAL: .X: ±.015 .XX: ±.010 .XXX: ±.002 FRACTIONAL: ±.060 ANGLES: X: ±1° .X: ±.5' .XX: ±.25'	DRAWN ODEW MATERIAL 6061 ALUMINUM	12/4/2023	**SKILLSUSA REGIONAL 2024** TITLE CAM MILL PART FOR STUDENTS SIZE B DWG NO CAM MILL 2024 REV SCALE SHEET