

# Minnesota Articulated College Credit (ACC) Agreement

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**Agreement Name:** **Bench-Saws-Drilling**

**Agreement Last Reviewed:** Fall 2023

**Next Review Date:** Fall 2025

College Courses			
Class	Title	School	Credits
MACT 1801	Fundamentals of Precision Manufacturing	Ridgewater College	1.0 of 2.0
MTT 1140	Measurement, Materials & Safety	South Central College	2.0 of 3.0

## Curriculum Content Objectives

To receive credit, 100% of the following content objectives will be covered:

1. Practice drilling, sawing, and grinder safety
2. Identify types of sawing machines
3. Define sawing machine nomenclature
4. Define drilling machine nomenclature
5. Select saw blades
6. Demonstrate knowledge of saw blade installation
7. Adjust saw guides
8. Determine sawing speeds
9. Define saw blade nomenclature
10. Saw projects to length
11. Calculate drilling operations speeds
12. Calculate drilling operations feeds
13. Perform drilling on the drill press
14. Perform counter-boring on the drill press
15. Perform counter-sinking on the drill press
16. Perform reaming on the drill press
17. Measure countersunk holes
19. Select cutting fluids
20. Use cutting fluids
21. Select grinding wheels
22. Adjust tool rest and spark guard
23. Define tap nomenclature
24. Interpret tap & drill charts
25. Select and use tap drills and taps
26. Explain semi-precision layout

27. Explain precision layout
28. Use semi-precision layout tools
29. Use precision layout tools
30. Identify types of direct measuring
31. Use direct measurement tools
32. Identify comparison (indirect) measurement tools
33. Use bench and hand tools
34. Identify deburring tools
35. Use deburring tools

## **Assessments**

Students must achieve no less than 80% or B for a final grade in the high school course to receive ACC. Please refer to attached checklist.

## **ACC Concept**

Through Articulated College Credit (ACC), specific college curriculum content goals and assessments are embedded in participating high school career and technical education (CTE) programs as specified in this agreement. Relevant knowledge, skills, and standards are taught by qualified CTE high school instructor(s) in one or more high school course. ACC is awarded if the student meets the college equivalency standards and later enrolls in the college(s) listed requiring the course in a specific program.

## Assessment Checklist Bench- Saws-Drilling

### Handtapping

- ☐ Use Hand Tools
- ☐ Tap Holes
- ☐ Cut O.D. Threads

### Benchwork

- ☐ Measure Layout Lines
- ☐ Scribe Layout Lines
- ☐ Layout Work Piece

### Contour Sawing

- ☐ Practice Safe Sawing Practices
- ☐ Select Saw Blades
- ☐ Select Blade Speed
- ☐ Weld Saw Blades
- ☐ Install Saw Blades
- ☐ Perform Contour Sawing Operations
- ☐ Perform Cutoff Saw Operations

### Drill Press

- ☐ Practice Safe Drill Press practices
- ☐ Machine Grind Twist Drills
- ☐ Hand Grind Twist Drills
- ☐ Set Up Drill Press
- ☐ Calculate Drilling Speeds
- ☐ Drill Holes
- ☐ Calculate Counter Boring Speeds
- ☐ Drill Holes
- ☐ Calculate Countersinking Speeds
- ☐ Counter Bore Hole
- ☐ Calculate Reamer Speeds
- ☐ Determine Stock Allowance
- ☐ Ream Holes

### Pedestal Grinder

- ☐ Practice Grinder Safety
- ☐ Dress Grinding Wheel
- ☐ Identify Tool Angles
- ☐ Operate Grinder
- ☐ Grind Right Hand Turning Tool
- ☐ Grind Threading Tool

## OPTIONAL

### Lathe

- ☐ Perform Lathe Safety
- ☐ Mount & Use Three Jaw Chuck
- ☐ Face Off Stock To Length
- ☐ Turn Diameters To Length
- ☐ Mount & Use Colet Chuck
- ☐ Determine Speeds & Feeds
- ☐ File Off Burr

### Mill

- ☐ Perform Mill Safety
- ☐ Mount & Remove Cutters
- ☐ Indicate Mill Head & Vise
- ☐ Determine Speeds & Feeds
- ☐ Endmill to Size
- ☐ Side Mill Parts Square
- ☐ Mill Steps
- ☐ Remove Burrs