



Western Technical College

10420211 Surface Grinding (CBE)

Course Outcome Summary

Course Information

Description	Requires the learner to operate the manual surface grinder and implement various surface grinding processes. Students should complete this course after Milling Operations 3.
Career Cluster	Manufacturing
Instructional Level	One-Year Technical Diploma
Total Credits	1
Total Hours	36

Textbooks

No textbook required.

Learner Supplies

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** Campus Shop. Required.

Proper footwear - \$35.00-75.00. **Vendor:** To be discussed in class. Required.

Scientific calculator (recommend T1-36x Solar). **Vendor:** Campus Shop. Required.

Three-ring binder. **Vendor:** Campus Shop. Required.

Clipboard. **Vendor:** Campus Shop. Required.

Pens/Pencils/Black Sharpie Marker. **Vendor:** Campus Shop. Required.

Minimum 4GB USB Flash Drive. **Vendor:** Campus Shop. Required.

Success Abilities

1. Cultivate Passion: Expand a Growth-Mindset
2. Live Responsibly: Develop Resilience
3. Live Responsibly: Foster Accountability
4. Refine Professionalism: Improve Critical Thinking

Program Outcomes

1. Apply basic safety practices in the machine shop.
2. Interpret industrial/engineering drawings.
3. Apply precision measuring methods to part inspection.
4. Perform basic machine tool equipment set-up and operation.

Course Competencies

1. Perform wheel truing/dressing techniques.

Assessment Strategies

- 1.1. Written Product
- 1.2. Skill Demonstration

Criteria

You will know you are successful when

- 1.1. you select the proper grinding wheel for the specific process at hand.
- 1.2. you demonstrate proper wheel truing/dressing techniques.
- 1.3. you describe proper truing/dressing techniques.

Learning Objectives

- 1.a. Explore different grit sizes of wheels.
- 1.b. Select grinding wheel (based on grit size) for specific application.
- 1.c. Dress periphery of the grinding wheel per specifications.
- 1.d. Dress side of the grinding wheel per specifications.

2. Grind work piece surfaces flat and parallel within specified tolerances.

Assessment Strategies

- 2.1. Written Product
- 2.2. Skill Demonstration

Criteria

You will know you are successful when

- 2.1. you use proper infeeds and table movements to grind a surface flat/parallel
- 2.2. you grind two opposing surfaces flat/parallel
- 2.3. you verify that two opposed surfaces are flat/parallel.
- 2.4. you adjust dressing techniques to correct unacceptable surface finish.
- 2.5. you adjust infeed and table movements to correct unacceptable surface finish.
- 2.6. you apply inspection techniques while grinding to grind work piece features to size and location.
- 2.7. you make adjustments the grinding procedure to make sure work piece features are to size and location when done.

Learning Objectives

- 2.a. Identify infeeds and table movements for grinding a surface.
- 2.b. Grind surfaces to a specified requirements of surface finish and flatness/parallelism.
- 2.c. Inspect and verify the surface is flat/parallel.
- 2.d. Troubleshoot when surfaces are not flat/parallel within specifications (burrs, cleanliness, W/P condition).

3. Grind adjacent work piece surfaces mutually perpendicular within specified tolerances.

Assessment Strategies

- 3.1. Written Product
- 3.2. Skill Demonstration

Criteria

You will know you are successful when

- 3.1. you grind two surfaces perpendicular to each other.

- 3.2. you grind three or more surfaces mutually perpendicular to each other
- 3.3. you verify that surfaces are perpendicular
- 3.4. you make adjustments to setups to correct perpendicularity.
- 3.5. you apply inspection techniques while grinding to grind work piece features to size and location
- 3.6. you make adjustments the grinding procedure to make sure work piece features are to size and location when done

Learning Objectives

- 3.a. Demonstrate setup techniques for grinding a surface perpendicular to another surface.
- 3.b. Demonstrate setup techniques for grinding adjacent surfaces mutually perpendicular.
- 3.c. Inspect and verify that adjacent surfaces are perpendicular.
- 3.d. Troubleshoot when adjacent surfaces are not perpendicular within specifications (burrs, cleanliness, W/P condition).

4. Grind angled surfaces within specified tolerances.

Assessment Strategies

- 4.1. Written Product
- 4.2. Skill Demonstration

Criteria

You will know you are successful when

- 4.1. you grind an angled surface to size and location
- 4.2. you verify the size and location of a ground angle
- 4.3. you apply inspection techniques while grinding to grind work piece features to size and location
- 4.4. you make adjustments the grinding procedure to make sure work piece features are to size and location when done

Learning Objectives

- 4.a. Demonstrate grinding angled surfaces to size and location.
- 4.b. Inspect and verify the surface angles are within tolerances.
- 4.c. Troubleshoot problems encountered in surface grinding processes.