



**Western Technical College**

**10420209 Turning Operations 2 (CBE)**

**Course Outcome Summary**

**Course Information**

<b>Description</b>	Requires the learner to apply appropriate machining theory principles and progressive turning skills to operate turning machines according to industry standards.
<b>Career Cluster</b>	Manufacturing
<b>Instructional Level</b>	One-Year Technical Diploma
<b>Total Credits</b>	1
<b>Total Hours</b>	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. Live Responsibly: Foster Accountability
2. Refine Professionalism: Improve Critical Thinking
3. Refine Professionalism: Participate Collaboratively

## 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. Implement machining theory principles to turning operations.

#### Assessment Strategies

- 1.1. Written Product
- 1.2. Skill Demonstration

#### Criteria

- 1.1. you calculate correct spindle speeds for turning operations
- 1.2. you determine correct feed rates for turning operations
- 1.3. you determine correct infeeds for turning operations
- 1.4. you identify correct cutting fluids for turning operations

#### Learning Objectives

- 1.a. Calculate spindle speeds.
- 1.b. Determine feed rates to meet surface finish requirements.
- 1.c. Determine infeeds for optimum machining efficiency.
- 1.d. Identify proper cutting fluids for various operations/processes.

### 2. Operate turning machines according to industry standards.

#### Assessment Strategies

- 2.1. Skill Demonstration

#### Criteria

*You will know you are successful when*

- 2.1. you operate the machine without injury to yourself or others.
- 2.2. you operate the equipment without causing damage to the machine or equipment.
- 2.3. you follow industry safety protocols.
- 2.4. you face a work piece to length
- 2.5. you center drill a work piece
- 2.6. you turn diameters to length
- 2.7. you knurl a work piece
- 2.8. you machine a groove in a work piece
- 2.9. you machine an angle on a work piece with the compound rest
- 2.10. you machine a taper on a work piece with the taper attachment
- 2.11. you machine threads, internal and external, on a work piece

#### Learning Objectives

- 2.a. Demonstrate the ability to Face a work piece to length on a lathe.
- 2.b. Demonstrate the ability to Center Drill and perform subsequent hole making operations, on a lathe.
- 2.c. Demonstrate the ability to machine external diameters, to length, on a lathe.
- 2.d. Demonstrate the ability to Knurl on a lathe.
- 2.e. Demonstrate the ability to machine grooves on a lathe.
- 2.f. Demonstrate the ability to set up and machine an angle using the compound rest.
- 2.g. Demonstrate the ability to setup the Taper Attachment on a lathe.
- 2.h. Demonstrate the ability to Bore internal diameters, to length/depth, on a lathe.
- 2.i. Demonstrate the ability to setup and cut external and internal threads on a lathe.
- 2.j. Apply work holding devices as required for different turning operations.

### 3. Calculate and inspect angles, tapers, and thread dimensions.

## **Assessment Strategies**

### **3.1. Demonstration**

#### **Criteria**

*You will know you are successful when*

- 3.1. you obtain specified surface finish on a work piece.
- 3.2. you machine pieces to within specified tolerances.
- 3.3. you inspect workpieces and adjust machines accordingly.

#### **Learning Objectives**

- 3.a. Identify components of a thread callout.
- 3.b. Locate and utilize thread dimensioning tables in Machinery's Handbook.
- 3.c. Locate and utilize various taper charts/tables in the Machinery's Handbook.
- 3.d. Use the three wire thread charts to determine dimensions for machining/inspecting various threads.
- 3.e. Determine level of accuracy/precision required on workpiece.
- 3.f. Interpret manufacturing drawings for surface finish symbols.
- 3.g. Demonstrate the ability to achieve required Surface Finishes on a lathe.