Western Technical College

10444215 Machine Setup 1 for CNC Turning (CBE)

Course Outcome Summary

Course Information

Description	Requires the learner to set up CNC Turning machines for projects that require the application of two tools through tool selection and setup, work holding devices and program call up and proofing.
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: Increase Self-Awareness
2. Refine Professionalism: Improve Critical Thinking
3. Refine Professionalism: Practice Effective Communication

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 programming, set-up and operation of CNC Machine Tools.

Course Competencies

1. Perform machine start up/ maintenance activities on CNC turning machines.

Assessment Strategies

1.1. Written Product
1.2. Skill demonstration in the shop on CNC machine tools

Criteria

You will know you are successful when

1.1. you follow safety procedures when starting up machines.
1.2. you sequentially and accurately list the steps required to start and home CNC turning centers.
1.3. you correctly demonstrates the ability to start and home all CNC turning machines in the machine tool lab.
1.4. you participate in cleaning out the cutting fluid tank on a CNC machine.
1.5. you correctly prepare and add new cutting fluid solution to a CNC machine.

Learning Objectives

1.a. Observe safe operating procedures for machine start up
1.b. Demonstrate the process for starting and homing CNC turning machines.
1.c. Demonstrate the process for cleaning out the cutting fluid tank on a CNC turning machine.
1.d. Calculate proper mixture ratios for cutting fluid solutuons.

2. Determine tool and stock requirements for CNC turning programs.

Assessment Strategies

2.1. Written product
2.2. Skill Demonstration

Criteria

You will know you are successful when

2.1. you determine tooling requirements for CNC programs.
2.2. you use references to select correct carbide insert grade for specific CNC applications.
2.3. you use references to select correct carbide insert shape for specific CNC operations.
2.4. you use references to select correct carbide cutting tool holders for specific CNC applications.
2.5. you change carbide inserts and tooling.
2.6. you demonstrate the proper care and storage of carbide cutting tools.

Learning Objectives

2.a. Explain the factors to consider when selecting carbide grades
2.b. Explain the factors to consider when selecting carbide insert shape/geometry
2.c. Select carbide cutting tool holders/bodies for CNC turning applications
2.d. Identify the cutting tools needed for a particular program.
2.e. Describe how to use and care for carbide tooling

3. Determine work holding methods and stock location requirements.

Assessment Strategies

3.1. Written product
3.2. Skill Demonstration

Criteria

You will know you are successful when

3.1. you determine the correct diameter of stock to use for a given program/part
3.2. you determine how much stock must be sticking out of the chuck to safely machine the part
3.3. you analyze drawings and operations and select the correct work holding device.
3.4. you set up work in correct location to be safely machined.

Learning Objectives

3.a. Identify what work holder to use for the operation.
3.b. Determine stock type and diameter to use.
3.c. Determine how much stock should be sticking out of the chuck for safe machining.

4. Perform initial set up CNC turning machine.

5. Inspect part dimensions for conformity to dimensional tolerance requirements.

Assessment Strategies

5.1. Written product
5.2. Skill Demonstration

Criteria

You will know you are successful when

5.1. you complete a Part Production Record sheet for various parts.

Learning Objectives

5.a. Inspect parts to confirm dimensional tolerance.

6. Adjust tool offsets to bring parts within dimensional tolerance requirements.

Assessment Strategies

6.1. Skill Demonstration

Criteria

You will know you are successful when

6.1. make required offset adjustments to bring parts into dimensional tolerance.

Learning Objectives

6.a. Determine which tool(s) offset(s) need to be adjusted and how much