Western Technical College

10420203 Measurement and Inspection (CBE)

Course Outcome Summary

Course Information

Description	Requires the learner to use measurement tools and inspection equipment to maintain standards of quality in the manufacturing environment. Students are encouraged to take this course concurrently with Fundamentals of Machining and Blueprint Reading.
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. Live Responsibly: Develop Resilience
2. Live Responsibly: Foster Accountability
3. Refine Professionalism: Improve Critical Thinking

Program Outcomes

1. Apply precision measuring methods to part inspection.

Course Competencies

1. Identify measuring and inspection instruments used in the industry and their application and limitations.

Assessment Strategies

1.1. Written Objective Test

Criteria

You will know you are successful when

1.1. you use correct terminology when referring to various precision measuring tools and their components.
1.2. you identify and name different measuring devices.
1.3. you identify and name different inspection devices.
1.4. you summarize the purpose of the devices.

Learning Objectives

1.a. Identify various precision measuring tools.
1.b. Define general metrology terms.
1.c. Use correct terms for Precision measuring tools and their components.
1.d. Differentiate between levels of precision in various measurements with-in the English system.
1.e. Recognize limits of discrimination for measuring tools.

2. Measure using precision measurement instruments to specified levels of discrimination.

Assessment Strategies

2.1. Skill Demonstration

Criteria

You will know you are successful when

2.1. you demonstrate the proper techniques in the use of various measuring tools.
2.2. you select the proper measuring tool for the level of discrimination called for in various shop/lab activities.
2.3. you describe the function of different measuring tools.
2.4. you record measurements taken using various measuring tools.

Learning Objectives

2.a. Demonstrate the proper techniques in the use of a decimal inch ruler.
2.b. Demonstrate the proper techniques in the use of a vernier caliper and vernier height gage.
2.c. Demonstrate the proper techniques in the use of a dial caliper.
2.d. Demonstrate the proper techniques in the use of standard and vernier micrometers.
2.e. Demonstrate the proper technique in the use of an dial test indicators.
2.f. Demonstrate the proper technique in the use of various comparison measuring tools.
2.g. Demonstrate the proper use of an optical comparator.
2.h. Demonstrate uses of gauge blocks and gauge pins.
2.i. Demonstrate the proper techniques in the use of a plate protractor and/or a combination square protractor head.

3. Convert measurements between different units and/or systems.

Assessment Strategies

3.1. Written Objective Test

Criteria

You will know you are successful when

3.1. you convert between inch and metric measurements.
3.2. you convert between fractions and decimals.
3.3. you convert units within the Metric system.

Learning Objectives

3.a. Compute inch-to-metric, metric-to-inch conversions to appropriate levels of discrimination.
3.b. Convert fractions to decimals.
3.c. Convert to different units within the Metric system.

4. Investigate the application of tolerances, fits, and SPC in machining.

Assessment Strategies

4.1. Written Product