Western Technical College

31420372 Measurement and Inspection

Course Outcome Summary

Course Information

Description	Provides instruction in the care and use of measurement tools and inspection equipment necessary to maintain quality standard in the manufacturing environment. Semi-precision through high-precision measurement tools, gages, inspection sheets and processes, indirect and comparative inspection methods will be covered. Learners will apply knowledge, analyze part quality, and troubleshooting manufacturing equipment and processes to determine cause and effect.
Career Cluster	Manufacturing
Instructional Level	Technical Diploma Courses
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.

Program Outcomes

1. MACH 1. Apply basic safety practices in the machine shop
2. MACH 2. Interpret industrial/engineering drawings
3. MACH 3. Apply precision measuring methods to part inspection

Course Competencies

1. Communicate using industry terminology regarding measurement.

Assessment Strategies

1.1. Demonstration
1.2. Performance

1.3. Written Product

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 measure the correct work piece characteristics or features when completing shop/lab activities.

Learning Objectives

1.a. Describe physical shapes and properties of three dimensional objects and features.
1.b. Identify measuring tools.
1.c. Define general metrology terms.
1.d. Use correct terms for equipment.
1.e. Identify need for precision in units, labels, and use of terms.

2. Use various measuring tools to specified levels of discrimination.

Assessment Strategies

2.1. Demonstration
2.2. Performance

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.

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 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 various dial and 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. Relate uses of gage blocks and gage pins.
2.i. Demonstrate the proper techniques in the use of a plate protractor and/or a combination square protractor head.

3. Select measurements/measuring tools to meet application requirements.

Assessment Strategies

3.1. Demonstration
3.2. Performance
3.3. Written Product

Criteria

You will know you are successful when:

3.1. you record measurements taken with various measuring tools.
3.2. you correctly determine the gage block needed for creating specific angles with a sine bar.

Learning Objectives

3.a. Recognize difference between English and metric measurements.
3.b. Recognize limits of discrimination for measuring tools.
3.c. Determine the gage block stack required for creating specific angles with a sine bar.

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

Assessment Strategies

4.1. Written Product (score 70% or higher)

Criteria

You will know you are successful when

4.1. you convert between inch and metric measurements.
4.2. you convert fractions to decimals/decimals to fractions.

Learning Objectives

4.a. Identify inch-to-metric, metric-to-in conversion factors.
4.b. Compute inch-to-metric, metric-to-inch conversions to appropriate levels of discrimination.
4.c. Convert fractions to decimals.