MACH A122: MACHINE SHOP INSEPECTION

Item	Value
Curriculum Committee Approval Date	12/02/2020
Top Code	095630 - Machining and Machine Tools
Units	1.5 Total Units
Hours	45 Total Hours (Lecture Hours 18; Lab Hours 27)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

This course provides a basic understanding of the purpose and procedures for verifying the dimensional properties of manufactured parts. Students will train and practice, using appropriate inspection equipment. ADVISORY: MACH A120. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Verify manufactured parts to blueprint.
2. Select appropriate tools for required tolerances.

Course Objectives

- 1. Qualify manufactured parts to blueprint dimensions.
- 2. Demonstrate an understanding of the basic tools of inspection.
- 3. Convert Dimensions from Inch to Metric and vice-versa.
- 4. Understand and know how to use comparators
- 5. Understand how to inspect a variety of manufactured parts.

Lecture Content

1. Course Overview and Inspection Terminology A. Course Structure B. Purpose for Inspection C. Set-up and Planning D. Basic Tools used for Inspection E. First Article vs. In-Process Inspection 2. Scales and Vernier instruments A. Rulers and Scales B. Vernier instruments C. Reading Scales and Verniers D. Tolerances of reading Scales and Vernier 3. Calipers and Height Guages A. Reading Dial Calipers B. Digital Calipers C. Tolerance of Dial and Digital D. Height Guages 4. Guage Blocks and other manual Guages A. Guage Block Grades B. Selec ting C. Wringing Together D. Thread Guages E. Guage Pins 5. Micrometers A. Rough Reading B. Fine Reading using vernier C. Indicating Micrometers D. Blade, Thread and other specialty micrometers 6. Dial Indicators A. Dial and Electronic B. Comparison measurements using Guage Blocks C. Limits of Use D. Accuracy Limits E. Care For 7. Internal Measurements, Slots and Threads A. Internal Micrometers B. Bore Guages a. Setup C. Roundness of IDs D. Slot Widths a. Guage Pins b. Adjustable Parallels c. Guage Blocks E. Thread Wires and Pitch Measuring 8. Electronic Guaging and Reports A. Coordinate Measuring Machine B. High Amplification Measuring C. Accuracy and Repeatabilty of Measurments D. Reporting of Measurement Results

Lab Content

A)Using inspection tools students will verify manufactured parts.B)Students will receive hands-on training on the proper use of inspection tools.C)Students will apply blueprint demensions to to projects,select appropriate tools for required tolerance and demonstrate understanding of inch to metric conversion.D)Write basic inspection reports

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Lecture and Lab activities

Reading Assignments

Weekly reading from instructor handouts, blueprints

Writing Assignments

Write basic inspection reports

Out-of-class Assignments

Inspection reports

Demonstration of Critical Thinking

Apply blueprint dimensions to projects, select appropriate tools for required tolerances, demonstrate understanding of inch to metric conversion.

Required Writing, Problem Solving, Skills Demonstration

Write basic inspection reports, apply understanding of blueprint dimensions to projects, demonstrate an understanding of basic tools for inspection.

Eligible Disciplines

Machine tool technology (tool and die making): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Other Resources

1. Instructor handouts, blueprints