



South Central College

MTT 2230 Quality Assurance III

Course Outcome Summary

Course Information

Description	This course is a continuation of Quality Assurance II. New topics include more alternative measuring techniques and final inspection of advanced project. (Prerequisites: MTT 2130)
Total Credits	2
Total Hours	48

Types of Instruction

Instruction Type	Credits/Hours
Lec	1/16
Lab	1/32

Pre/Corequisites

MTT 2130

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Incorporate Geometric Dimensioning and Tolerancing (GD&T)

Learning Objectives

Explain the general overview, geometric characteristic symbols, rules, terms and definitions
Describe measurement principles, open set-up and Coordinate Measuring Machine (CMM)
Use Coordinate Measuring Machine (CMM)

2. Explain limits of size

Learning Objectives

Describe Rule #1
Identify features with & without size
Explain limits & fits

3. Describe position tolerancing and verification

Learning Objectives

Describe plus/minus tolerances
Interpret datum reference frames
Explain datum precedence
Identify basic dimensions
Explain maximum material condition (MMC), least material condition (LMC), reference feature size (RFS) feature modifiers
Describe profile tolerancing

4. Verify product plans and virtual condition

Learning Objectives

Create a definition drawing, manufacturing process plan, dimensional measurement plan
Describe boundaries
Explain calculating virtual size
Use perpendicularity as a refinement of position

5. Describe the datum reference frame

Learning Objectives

Describe datums, datum features, datum feature simulators
Describe holes, slots, shafts, tabs, widths as datum features
Explain datum feature precedence
Identify the constraining degrees of freedom
Describe datum feature simulator requirements
Describe partial datum features

6. Explain form tolerances

Learning Objectives

Identify flatness, straightness
Identify circularity, cylindricity

7. Explain orientation tolerances

Learning Objectives

Identify perpendicularity, parallelism, angularity
Explain orientation as a refinement of location

8. Identify advanced profile tolerances

Learning Objectives

Explain profile of a surface and line
Use profile to control size, form, orientation and location
Describe bilateral and unilateral tolerances
Explain application and verification principles
Explain profile measurement data reporting
Describe free state and restrained condition

9. Describe coaxial and runout tolerances

Learning Objectives

Create datum features with a single datum axis (A-B)
Use position to control coaxiality
Describe circular runout and total runout
Describe concentricity and symmetry
Use profile to control coaxiality

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request

and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

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