

Course Objectives/Course Outline
Spokane Community College

Course Title: Manufacturing Standards/Quality

Prefix and Course Number: MACH 138

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Identify a minimum of 3 manufacturing standards used in the composite industry.
- Apply part requirements found in those standards to technical drawings and machined parts.
- Identify and understand basic lean manufacturing terminology and concepts.
- Demonstrate entry-level proficiency using the following inspection tools CMMs, Optical comparators, Height gages, Profilometers, and Hardness testers.
- Understand the theory and purpose of Statistical Process Control in manufacturing
- Demonstrate Statistical Process control data charting and identify manufacturing problems using the (SPC) data.
- Understand the need to have MSDS sheets for the materials in their lab environment.
- Demonstrate an ability to find MSDS sheet information from trusted sources.

Course Outline:

- I. Manufacturing Standards
 - A. ISO 9000
 - B. Mil-Spec
 - C. AS 9100
 - D. Boeing Standards
 - E. Customer Specifications
 - F. Technical Drawing Specifications
- II. Basic Concepts of Lean Manufacturing
 - A. Five S Theory and Practice
 - B. Seven Wastes
 - C. Value Stream Mapping
 - D. Pull System vs. Push System
 - E. Continuous Improvement
- III. Advanced Inspection
 - A. Optical Comparator
 - B. Height Gage Use
 - C. Coordinate Measurement Machine (CMM)
 - D. Surface Plate Inspection Techniques
 - E. Quality Assurance Documentation
 - F. Surface Finish Testing
 - G. Rockwell Hardness Testing
- IV. Applied Statistical Process Control
 - A. Frequency Histograms
 - B. Variable Control Charts
 - C. Assignable vs. Chance Causes
 - D. Brainstorming and Problem Solving Quality Issues
- V. Materials Safety and Controls
 - A. MSDS Documentation
 - B. Hazardous Materials Handling
 - C. Proper Disposal of Hazardous Materials