multisoft
Systems

CMM Inspection & Programming Training

COURSE CONTENT

GET IN TOUCH

Multisoft Systems
B - 125, Sector - 2, Noida

(+91) 9810-306-956

info@multisoftsystems.com

www.multisoftsystems.com

About Multisoft

Train yourself with the best and develop valuable in-demand skills with Multisoft Systems. A leading certification training provider, Multisoft collaborates with top technologies to bring world-class one-on-one and certification trainings. With the goal to empower professionals and business across the globe, we offer more than 1500 training courses, which are delivered by Multisoft's global subject matter experts. We offer tailored corporate training; project Based Training, comprehensive learning solution with lifetime e-learning access, after training support and globally recognized training certificates.

About Course

CMM (Coordinate Measuring Machine) Inspection & Programming training by Multisoft Systems is designed to equip professionals with the essential skills required for precise dimensional measurement and quality assurance in modern manufacturing environments. This comprehensive program focuses on the fundamentals of CMM operations, measurement techniques, and programming methodologies used across industries such as automotive, aerospace, and heavy engineering.

Module 1: Introduction to Metrology & CMM

- ✓ Basics of metrology and measurement systems
- ✓ Importance of dimensional inspection in manufacturing
- ✓ Introduction to Coordinate Measuring Machines (CMM)
- ✓ Types of CMM (Bridge, Cantilever, Horizontal Arm, Gantry)
- ✓ Applications across industries

Module 2: CMM Machine Components & Working

- ✓ Structure and construction of CMM
- ✓ Axis configuration (X, Y, Z)
- ✓ Probe systems and types (touch trigger, scanning probes)
- ✓ Machine control systems
- ✓ Working principles of CMM

Module 3: Coordinate Systems & Alignment

- ✓ Cartesian coordinate system fundamentals
- ✓ Part coordinate system setup
- ✓ Alignment techniques (3-2-1 alignment)
- ✓ Datum structures and reference systems
- ✓ Best-fit alignment methods

Module 4: Probing & Calibration Techniques

- ✓ Probe qualification and calibration
- ✓ Stylus selection and configuration
- ✓ Probe offset and compensation
- ✓ Calibration procedures and best practices
- ✓ Error sources and compensation

Module 5: GD&T Fundamentals

- ✓ Introduction to Geometric Dimensioning & Tolerancing
- ✓ Symbols, rules, and standards
- ✓ Form, orientation, location, and runout tolerances
- ✓ Reading and interpreting engineering drawings
- ✓ Applying GD&T in inspection

Module 6: Measurement & Inspection Techniques

- ✓ Measurement of basic geometries (lines, circles, planes, cylinders)
- ✓ Complex feature measurement
- ✓ Profile and surface inspection
- ✓ Tolerance evaluation and analysis
- ✓ Inspection planning

Module 7: CMM Programming Fundamentals

- ✓ Introduction to CMM software interface (e.g., PC-DMIS/Calypso)
- ✓ Manual vs. automatic programming
- ✓ Program structure and flow
- ✓ Feature creation and measurement routines
- ✓ Editing and debugging programs

Module 8: Advanced Programming & Automation

- ✓ Parametric programming concepts
- ✓ Use of loops and variables
- ✓ CAD-based programming (offline programming)
- ✓ Automation of inspection routines
- ✓ Optimization of cycle time

Module 9: Data Analysis & Reporting

- ✓ Inspection result analysis
- ✓ Generating reports and documentation
- ✓ Graphical representation of data
- ✓ Statistical Process Control (SPC) basics
- ✓ Exporting and sharing reports

Module 10: Error Handling & Best Practices

- ✓ Sources of measurement errors
- ✓ Environmental effects on measurement
- ✓ Machine maintenance and care
- ✓ Quality standards and compliance
- ✓ Industry best practices for inspection

Module 11: Industry Use Cases & Projects

- ✓ Automotive component inspection case study
- ✓ Aerospace precision inspection example
- ✓ Real-time project: program creation and execution
- ✓ Troubleshooting real-world scenarios