

COURSE AGENDA

Day 1

- CNC Process
 - Design
 - Implementation
 - Production
 - Controller
- Machine Tools
 - Drilling
 - Lather Operations
 - Milling
- CNC System Basics
 - Controller
 - Drive System
 - Axes
 - Lathe orientation
 - Mill Orientation
 - 4 axes
- CNC Feedback Systems
 - Encoder/Resolver Style
- Servo System Basic Components
 - Closed Loop Servo Circuit
 - Absolute Encoder
 - Glass or Linear Scales
 - Rotary Axes & Encoder Feedback

Day 2

- Terminology
 - Vertical & Horizontal Spindle machines
 - Turning Center
 - Machining Center
- Types of Applications
- Tooling & Function
 - Cutting tools
 - Effective Machining Tool Selection
 - Tool Material Progression

Computer Numerical Control Fundamentals



COURSE NUMBER: MFG217

Course Purpose

This course provides knowledge of CNC basic fundamentals applied to the production-machining environment.

At the completion of this course, you will be able to:

- Identify and categorize CNC terminology needed for communication
- Interpret basic G&M code programming determining cutter paths and program tasks
- Identify tooling and insert types for limits on the feed and speed ranges
- Determine the machine cube orientation and the effect on axis designations with respect to the Cartesian coordinate system
- Locate the various datum reference positions and categorize them into machine zero, part zero, safe job start and tool change positions
- Identify the tool offset adjustment format to eliminate mistakes in adjusting part dimensional control
- Categorize the closed loop system format when determining positional feedback system style employed by the OEM

COURSE DESCRIPTION

Manufacturing

COURSE AGENDA

Day 2 (continued)

- Feeds and Speeds
 - Spindle speed
 - Cutting speed
 - Feed rate
- Machine Operating Modes
 - Jog Control
 - Single Block Cycling
 - MDI
- Cartesian Coordinate System
- Reference Positions
- Tool Offsets
 - Diameter offsets
 - Length offsets
- CNC Programming
 - Word Addresses
 - Basic G Codes
 - Basic M Codes

Course Length

This is a two-day course.

Course Number

The course number is MFG217.

IACET CEUs

CEUs Awarded: 1.4



To Register

To register for this or any other Rockwell Automation training course, contact your local authorized Allen-Bradley Distributor or your local Sales/Support office for a complete listing of courses, descriptions, prices, and schedules.

You can also access course information via the Web at <http://www.rockwellautomation.com/training>

Who Should Attend

All individuals whose responsibilities involve CNC operations should attend this course.

Prerequisites

None

Student Materials

To enhance and facilitate your learning experience, the following materials are provided as part of the course package:

- *Student Manual*, which contains the key concepts, definitions, and examples presented in the course including hands-on exercises.

Hands-On Practice

Throughout this course, you will have the opportunity to practice the skills you have learned through class interaction and demonstrative exercises. These exercises focus on common CNC processes, terminology, operating modes, and basic programming introduced during the lessons.

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