



Computer based training! 3 CD-ROM disks: 12.5 hours!

# CNC Router Programming, Setup, & Operation

Applicable to point to point machines, CNC routers, and woodworking machining centers

## Learn the most popular type of CNC woodworking equipment!

CNC routers have revolutionized the woodworking industry. If your company manufactures products made of any type of free-cutting materials like wood, plywood, fiberboard, plastic, or aluminum - it's likely you have them. Yet if you're people are not fully versed with their usage, it's likely that you're not taking full advantage of what they can do for you. Using our proven "key concepts" approach, this course teaches CNC router programming, setup, and operation from the ground up.

## Learn CNC features with the most intimate programming method!

The principles of CNC are best introduced and learned during discussions of G-code-level programming (also called manual programming). Concepts like program zero assignment, motion types, tool length compensation, and router radius compensation are easy to master at G code level. Yet many CNC people that use computer aided manufacturing (CAM) systems avoid G code level programming like the plague. Or worse -- they've never been exposed to it. Regardless of how you develop programs, *all* CNC people should have a good working knowledge of G code - especially if program changes must be made during a program's verification. Using a CAM system without understanding the G code level programs it produces is like using a calculator without understanding basic arithmetic! Here's your chance to get everyone up to speed!

## Learn the most popular control in the industry!

While our key concepts can be applied to any CNC router and control combination, all specific examples are given in the format for the Fanuc control - the industry standard for CNC. Fanuc is so popular that many (especially newer) control manufacturers claim to be "Fanuc-compatible" (including Mitsubishi, Yasnac, Flash-Cut, and Delta Tau).

## Lesson structure

Each of the 23 lessons will have a lesson plan, the lesson presentation, and a lesson summary. After each lesson, there's an exercise to do. Nine of the exercises include programming activities. Answers are provided to check the student's work. This simple structure makes it easy to learn CNC - and it can be used over and over again!

## Microsoft PowerPoint Viewer

All presentations include narrations & colorful animated graphics and have been prepared in Microsoft PowerPoint. Microsoft PowerPoint viewer is included to show presentations.

## Twenty-three tutorial lessons!

The course is presented in tutorial format (compare this to your control manufacturer's programming manual). While we do assume that the student has an understanding of basic woodworking, we assume nothing about their current knowledge of CNC. Using a building blocks approach, we constantly add to previously presented information.

### Key concepts and lessons:

#### Key concept one: Know your machine

- 1: Machine configurations 43:25
- 2: Flow of the programming process 26:25
- 3: Visualizing program execution 16:45
- 4: Understanding program zero 23:10
- 5: Locating the program zero point 18:20
- 6: Two ways to assign program zero 10:40
- 7: Introduction to programming words 33:35

#### Key concept two: You must prepare

- 8: The importance of preparation 23:35

#### Key concept three: Three kinds of motion

- 9: Motion Types 36:50

#### Key concept four: Three kinds of compensation

- 10: Introduction to compensation 12:10
- 11: Tool length compensation 30:25
- 12: Router radius compensation 56:05
- 13: Fixture offsets 23:40

#### Key concept five: Program formatting

- 14: Program formatting 16:30
- 15: Four kinds of program format 56:25

#### Key concept six: Special features

- 16: Canned cycles 44:20
- 17: Sub-programming 20:45
- 18: Other special features of programming 57:25

#### Key concept seven: Know your machine

- 19: Setup and operation tasks 61:40
- 20: Buttons and switches 27:55

#### Key concept eight: Three modes of operation

- 21: The three modes of operation 19:10

#### Key concept nine: Key operation procedures

- 22: The key operation procedures 41:45

#### Key concept ten: Know how to verify programs

- 23: Safely verifying and running programs 35:40

## What you get!

- Three CD-ROM disks totaling 12.5 hours of presentation
- One student manual (300 pages)
- One workbook (23 exercises & 9 programming activities)
- Answer book
- Course outline showing the location of all material
- Certificate upon completion
- One year subscription to *The Optional Stop* newsletter
- Free phone/email assistance

## System requirements:

Multimedia computer with sound system & CD-ROM drive  
Pentium processor  
Windows 95 or Windows 98 operating system  
16 MB RAM  
Minimum 4 MB free hard drive space

## The price for unlimited training? ... \$349.00

Extra student manual: \$60.00 - extra workbook: \$19.95



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