

Okuma

Factory Training

for

Fundamental Programming and Operation of Grinders - GA/GP/GU

Course Code : GC701

Prerequisite : None

Credits : 0

Course length : 4.5 days

Class Size : 6 persons

COURSE OBJECTIVES - Upon completion, the individual will be proficient in all basic skills necessary to allow the functional / productive operation of the machine tool, and associated safety practices.

The course is aligned to providing the knowledge and skills required to "translate" the part drawing into a finished product. The individual will be capable of defining the list of required processes, their logical / optimum sequence, create the complete CNC part program, install the appropriate toolings correctly, establish the program zero point, and perform corresponding wheel and diamond offsets.

Course emphasis is a blend of classroom instructional theory, time spent on the machine tool, and individually displayed skills.

Comprehension of the topics is measured by both actual demonstration and an exam.

COURSE REGISTRATION - please contact *Von Pickett* at (803-981-7000) the Institute for Manufacturing Productivity to obtain program availability dates, or check our website <http://imp.okuma.com>

GC701 Course Outline

Monday

- Introductions
- Course Objectives
- Overview of grinders - major components and terminology
- Basic workholding methods and wheel types
- Machine axes - unit systems - coordinate systems
- Work Coordinate System
- Wheel Coordinate System
- Tool Function (T)
- Diamond Functions (D)
- Tool Data
- Diamond Tool Data
- Wheel Shapes
- Day's Review

Tuesday

- Q & A on previous day
- Today's Objectives
- 'G' Codes
- 'M' Codes
- Fixed Cycle Formats
- Fixed Cycle Parameter Codes
- Programming Structure/Format Options
- Example Programs
- IDX Files
- Dressing Fixed Cycle Formats
- Example Dressing Programs
- Dressing Fixed Cycle (details)
- Day's Review

Wednesday

- Q & A on previous day
- Today's Objectives
- Marposs E5 Amplifier Setup
- AS Code Explanation
- Example Gauge Grinding Programs
- VGAPX Explanation
- VGAPX Gap Eliminator
- VGAPX - VZCMX Compensation

- Example Programs
- Common Variable Program Example
- Local Variable Example
- Subroutine Program Example
- Day's Review

Thursday

Note: the balance of instructional time will be at the machine

- Q & A on previous day
- Today's Objectives
- Contour Dressing Example Programs
- Tool Nose Radius Compensation
- Dressing Programming Assignments
- Profile Grinding Format
- Profile Grinding Example Programs
- Diamond Zero Set Procedure - X, Z
- Zero Set Procedure
- Locator Setup
- Machine Operation Safety
- Machine Lock & Dry Run Program Execution
- Day's Review

Friday

- Q & A on previous day
- Today's Objectives
- Changing the grinding Wheel
- Editing Programs
- Proving out a New Program
- Machine Graphics Animation
- Grind First Part
- Multiple Spindle Zero Set
- Variable and High Frequency Spindle Setup
- Open Discussion
- Certificates
- Dismissal

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COURSE MATERIALS

OTI will utilize an array of materials to assure the most effective means of material presentation. Most typically, routine presentation devices will include overhead projector, VCR & monitor. In addition, an OSP simulator will reside in the active classroom, allowing for a immediate means of graphic reinforcement to the learning process/subject.

Upload/downloading of part programs will be done using laptop computers, and either Procomm, or Windows Terminal communication software; and either Disk Drive, or by RS232C port.

For those classes requiring the use of PC's, Okuma will provide an independent workstation for each attendee.

Attendees will be furnished with all appropriate manuals, handbooks, examples, etc. - in short, those constructive reference material that correlate to the course content and its ultimate goals.

Additional copies of course materials are available, and can be obtained by contacting your local Okuma distributor. Charges will be appropriately based on the actual material(s) being sought.

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PRE ATTENDANCE EVALUATION

Course Code : GC701

Prerequisite : None

Credits : 0

Course length : 5 days

Class Size : 6 persons

Name _____

Company _____

Okuma Distributor _____ Class Date Requested _____

Have you ever attended any course offerings at Okuma ?

Please list the current Okuma equipment at your present facility ?.

Of the above list, what has **your Okuma experience** been todate ? - I.e. setup, operator, processing, etc..

What other related CNC machinery have you operated; or are familiar with its general operation, and programming format ?

Do you have any technical training that is related to CNC machine tools ? If so, please list.

In your daily job responsibilities, please check all that apply:

- | | | |
|--|---|--|
| <input type="checkbox"/> tooling selection | <input type="checkbox"/> program creation | <input type="checkbox"/> machine setup |
| <input type="checkbox"/> process editing | <input type="checkbox"/> production runs | <input type="checkbox"/> inspection |

What specific skill(s) do you wish to strengthen by attending the attached course. Please list in the order of importance - (1-5).

- | | | |
|--------------------------|----------------------|-----------------------|
| () Machine safety | () setup techniques | () manual operations |
| () CNC program creation | () tool path/layout | () other _____ |

Check **all** that apply; - I am familiar with:

- | | | |
|--|--|--|
| <input type="checkbox"/> interpreting blueprints | <input type="checkbox"/> basic measuring tools | <input type="checkbox"/> basic math |
| <input type="checkbox"/> angular measurement | <input type="checkbox"/> geometry | <input type="checkbox"/> trigonometry |
| <input type="checkbox"/> tool selection | <input type="checkbox"/> materials knowledge | <input type="checkbox"/> speed/feeds |
| <input type="checkbox"/> chucking methods | <input type="checkbox"/> inspection methods | <input type="checkbox"/> stat. process control |

For what **specific machine model** is this training being sought?

What, if any, **specific topics** are *not* listed in the attached course outline that you feel are *critical* for your complete satisfaction in attending **this** course.

☺ Thank you for completing the above questions. These responses will assist Okuma to better evaluate your needs/expectations regarding the attached course offering.

Other:

The Okuma Institute for Manufacturing Productivity has a dress attire as follows:

Men Sports shirts or other with collar
Casual or Dress slacks
No bluejeans, shorts, T shirts, or sneakers

Women
Shirt or blouse with collar
Dress slacks, shirts or dresses
No bluejeans, shorts, sandals

Safety glasses are required when in the showroom / shop areas, and are supplied at no charge.

Lunch is provided for students attending classes. Students eating lunch off campus are to refrain from alcohol consumption due to safety regulations.