




Training Programm MAKINO GmbH

Training centres in the following European cities

<p>Bratislava Slovakia</p>	
<p>Cavenago (Milano) Italy</p>	
<p>Hamburg Germany</p>	
<p>Kirchheim unter Teck (Stuttgart) Germany</p>	
<p>Warsaw Poland</p>	

Training Class Syllabus 2020

Selecting the best manufacturing strategy is one of the main factors in enabling cost-effective production. Their efficient use is heavily dependent on the qualified training of staff.

MAKINO training courses meet these requirements, using **certified technical trainers**, to provide comprehensive training in the following areas:

- ✓ **NC-Programming (manual)**
- ✓ **USER- MACRO Programming**
- ✓ **Cell Control Software**
- ✓ **Software Solutions**
- ✓ **Automatic Work Measurement Devices**
- ✓ **Machine Operation**
- ✓ **Custom Courses**
 - **Individual Content**
 - **Technical Training**

Our programming courses educate participants in the structured programming of NC programs. No preparatory training is required, however experience in the use of NC machines is of advantage.

The aim of the system training courses is to instruct users on the operation of manufacturing control systems and organization of the production environment.

The interdisciplinary user training courses are compact courses designed to teach advanced users the handling, programming and service of our installation.

Our training classes enable you to achieve optimum production results.

Training Class Syllabus 2020

All courses are held in German or English. If there is sufficient demand, additional languages can be offered.

Please register early, as the number of course participants is limited.

The minimum number of participants per course is 4. The registration deadline is 2 weeks prior to the official start date of the course.

Classes start approx. 9:00am on the first training day in the agreed Training Centre.

Participants who have completed our courses, are given access to our telephone information line. Call us at any time with your questions or send an e-mail.

Of course, training courses are also available in customers facilities. Please contact us for conditions and possibilities.

We reserve the right to change the training programme at any time.

In case of any questions, please contact our staff in charge:

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Technical Trainer

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Training Class Syllabus 2020

Title	Class	Control	Duration (Dates)	Dates		
NC-Programming (manual)	1	Fanuc 31iB	5	20.01.- 24.01.	17.02.- 21.02.	30.03.- 03.04.
				22.06.- 26.06.	19.10.- 23.10.	30.11.- 04.12.
NC-Programming and Automatic Workpiece Measurement Devices	2	Fanuc 31iB	5	27.01.- 31.02.	02.03.- 06.03.	04.05.- 08.05.
				13.07.- 17.07.	31.08.- 04.09.	16.11.- 20.11.
NC-Programming and User-Macro	3	Fanuc 31iB	5	03.02.- 07.02.	23.03.- 27.03.	25.05.- 29.05.
				17.08.- 21.08.	02.11.- 06.11.	14.12.- 18.12.
Automatic Workpiece Measurement Devices, Makino Measurement Cycles	4	Fanuc 31iB	3	25.03.- 27.03.	14.04.- 16.04.	15.06.- 17.06.
				30.09.- 02.10.	28.10.- 30.10.	
Dialog Programming „Manual Guide I“	5	Fanuc 0i-D Fanuc 31iB	3	Upon request		
Machine Specific Operator Training	6	Fanuc 31iB Pro.5 Pro.6	3	Upon request		
	7	Fanuc 0i-D Pro.P	2	Upon request		
Cell Control and Software Solutions	8	MAS A5	3-5	Upon request		
	9	MPmax	1-2			
	10	Collision Safe Guard	2			

Class description

Class	Title	NC- Programming (manual)
1	Control	Fanuc 31i, Pro.5, Pro.6
	Target personnel	NC-Programmer and Machine Operating Personnel
	Prerequisites	All Operation and Programming personnel without dedicated MAKINO programming and operation experience. All personnel without programming and operation experience on MAKINO Pro.5 / Pro.6 controls.
	Contents	<ul style="list-style-type: none"> ✓ Programming fundamentals ✓ Composition of NC programs ✓ Work Coordinate Systems ✓ Subroutines ✓ Tool Data Management ✓ Canned Cycle Programming ✓ Machine Operation ✓ Explanation of the programming manual ✓ Programming an explanatory workpiece

Class description

Class	Title	NC-Programming and Automatic Workpiece Measurement Devices
2	Control	Fanuc 31i, Pro.5, Pro.6
	Target Personnel	All personnel with basic programming and operation experience on MAKINO Pro.5 / Pro.6 controls. To increase the specific skill level and focus on individual targets.
	Prerequisites	Programming and operation experience on MAKINO Pro.5 / Pro.6 controls.
	Contents	<ul style="list-style-type: none"> ✓ Composition of NC programs ✓ Subroutines ✓ Tool Data Management ✓ Canned Cycle Programming ✓ Sample Programs ✓ Excerpts of the Programming Manual ✓ Pallet and Tool Change Strategy ✓ Tool Life and Performance Monitoring ✓ Customer-specific Machine Settings ✓ Introduction to Measurement Probes <ul style="list-style-type: none"> ○ Handling ○ Maintenance and Calibration ✓ Manual and Semi-Automatic setting of Work Coordinate Offsets ✓ Automatic adjustment of the Workpiece Origin ✓ Integration in NC- Programs (In-Process Measurement) ✓ Operation on Machine

Class description

Class	Title	NC-Programming and User-Macro
3	Control	Fanuc 31i, Pro.5, Pro.6
	Target Personnel	All personnel with basic programming and operation experience on MAKINO Pro.5 / Pro.6 controls. To increase the specific skill level and focus on individual targets.
	Prerequisites	Programming and operation experience on MAKINO Pro.5 / Pro.6 controls.
	Contents	<ul style="list-style-type: none"> ✓ Composition of NC programs ✓ Subroutines ✓ Tool Data Management ✓ Canned Cycle Programming ✓ Sample Programs ✓ Excerpts of the Programming Manual ✓ Pallet and Tool Change Strategy ✓ Tool Life and Performance Monitoring ✓ Customer-specific Machine Settings ✓ User Macro Introduction ✓ Arithmetic and Logic Operations ✓ Use of Variables in NC programs ✓ Executing Subroutines by Macro ✓ Program samples and description ✓ Modal Macro execution and data transfer by NC program ✓ Macro execution using G- or M-functions

Class description

Class	Title	Automatic Workpiece Measurement Devices, Makino Measurement Cycles
4	Control	Fanuc 31i, Pro.5, Pro.6
	Target Personell	All personnel with basic programming and operation experience on MAKINO Pro.5 / Pro.6 controls. To increase the specific skill level and focus on individual targets.
	Prerequisites	Programming and operation experience on MAKINO Pro.5 / Pro.6 controls.
	Contents	<ul style="list-style-type: none"> ✓ NC and macro programming (Basic) ✓ Introduction to Measurement Probes <ul style="list-style-type: none"> ○ Handling ○ Maintenance and Calibration ✓ Makino Measurement Cycles ✓ Special machine functions

Class	Title	Dialog Programming „Manual Guide I“
5	Control	Fanuc 0i Modell D, Fanuc 31i B, Pro.P, Pro.5, Pro.6
	Target Personell	NC-Programmer and Operating Personnel
	Prerequisites	Programming and operation experience of milling machines.
	Contents	<ul style="list-style-type: none"> ✓ Dialog Programming System Fanuc Manual Guide i ✓ Creation and Editing of own menu blocks ✓ Use of cycles and the simulation ✓ Machine Operation

Class description

Class	Title	Machine Specific Operator Training
6, 7	Control	Fanuc 0i Modell D, Fanuc 31i B, Pro.P, Pro.5, Pro.6
	Target Personnel	Operators and Configuration Personnel
	Prerequisites	
	Contents	<ul style="list-style-type: none"> ✓ Machine layout ✓ explanation of individual components ✓ Explanation of the entire control panel and all Pro5, Pro P screens ✓ Changes to machine and NC parameters ✓ taking into account customer-specific requirements. ✓ MDI-input and correct handling ✓ Determining and using the workpiece zero point, manually and using the program ✓ Tool data administration in the Pro.5, Pro. P, Pro.6 ✓ Manually setting replacement tools and testing them at the same time ✓ Correct handling of service time monitoring. ✓ Viewing programs using the editor function ✓ Running in a test program ✓ Accessing the NC program ✓ Data backup ✓ Alarm analysis in extreme situations, e. g. pallet changer stuck halfway, same applies to tool changer ✓ Data transfer via machine interfaces ✓ All standard strategies ✓ Random mode ✓ Maintenance and care

Class description

Class	Title	Cell Control Solution: Modell MAS-A5
8	Control	Control system
	Target Personell	Operators, Programmers, Cell and Production Managers
	Prerequisites	
	Contents	<p>System commissioning at Makino Training center:</p> <ul style="list-style-type: none"> ✓ System Hierarchy, System Philosophy, Environmental Organization ✓ Systems Functions and Options ✓ Data Input and Operation ✓ Customer oriented example ✓ Introduction to Tool Management and realization in Factory environment <p>Training at Installation:</p> <ul style="list-style-type: none"> ✓ Data Input and Operation ✓ Understanding Alarm Situations using practical exercises, i.e. Analysis of the various alarms resulting of wrong Operation ✓ Semi- Automatic Operation at various levels ✓ System Care and Maintenance

Class description

Class	Title	Machine Productivity Maximizer MPmax
9	Control	Production Data Monitoring
	Target Personell	Operators, Programmers, Cell and Production Managers
	Prerequisites	
	Contents	<ul style="list-style-type: none"> ✓ Practical use of all Functions and options of the system ✓ Data Input and Operation ✓ Necessary Adjustment and installation as well as setup of additional clients

Class	Title	Collision Safe Guard
10	Control	Simulation Software
	Target Personell	NC-Programmer and Operating Personnel
	Prerequisites	CAM or Simulation Software experience
	Contents	<ul style="list-style-type: none"> ✓ Simulation of machining situation ✓ Setup of the Simulation ✓ Practical use ✓ Use of Machine Codes to manipulate the simulation ✓ Editing individual projects and their automated selection ✓ Import of customers models

Registration Form

Company			
Ordernumber			
Class			
Titel			
Date:	cw:	from:	till:
Registration:	Name:	Name:	
	Dept.:	Dept.:	
	Function:	Function:	
Registration:	Name:	Name:	
	Dept.:	Dept.:	
	Function:	Function:	
Registration:	Name:	Name:	
	Dept.:	Dept.:	
	Function:	Function:	
Hotelreservation	from:	till:	
Binding reservation for single rooms will be placed in your name and at your expense.			
Requested Training Center (please indicate)			
<input type="checkbox"/> Makino GmbH Essener Bogen 5 22419 Hamburg	<input type="checkbox"/> Makino GmbH Kruichling 18 73230 Kirchheim unter Teck	<input type="checkbox"/> Makino s.r.o. Tuhovska 31 85101 Bratislava	
<input type="checkbox"/> Makino Italia S.r.l. Strada privata delle Orobie, 5 Località Santa Maria in Campo 20873 Cavenago Brianza (MB)	<input type="checkbox"/> Makino Sp. z o.o. ul. Nowa 10, Stara Iwiczna 05-500 Piaseczno, Poland	<input type="checkbox"/> Kundenwerk	
Registration by:		Dept.:	
Phone:		E-mail:	
Street		Code, City	
Signature and Company stamp			

Training Terms and Conditions

I. Registration

All students are required to fill out an enrollment form to register for classes. Please use the included form. Registration is closed 2 weeks before start of the class.

Minimum Class size: 4 Students

Maximum Class size: 6 Students

Please send your registration to:

MAKINO GmbH

Training Department

Serfas / Wiltschek

Essener Bogen 5

22419 Hamburg

II. Registration Confirmation

Prior to begin of the training class, a written enrollment confirmation as well as information for travel and arranged Hotel accommodation is send to your attention.

III. Services of MAKINO GmbH during trainings

- Execution of the Training
- Providing Training Material
- Drinks during Breaks
- Lunch during Training time
- Hotelreservation (Specific requests are respected)

IV. Pricing

Training costs are offered without VAT, which will be added to the invoice in the current legal amount.

Accommodation, Hospitality and Travel Cost are not included in the Training Cost.

V. Copyright

It is prohibited to copy and multiply the provided training materials for unauthorized purpose. Furthermore it is prohibited to promote, use or distribute the trained content without prior authorization by Makino Training Dept. to others.

VI. Safety regulations

Course participants are obliged to observe the safety and accident prevention regulations relevant to the MAKINO factory premises as well as the applicable regulations governing the maintenance of order, in particular those relating to access..

VII. Right to alterations

We reserve the right to the following changes:

- Cancellation of training courses. No liability in terms of damages or cancellation claims will be accepted.
- Updating the technical content of training courses without prior notice.

VIII. Attention

Please note that MAKINO refuses any liability for damages on the machine or workpiece caused by your operation during the training program. According to No. IV and VI of the conditions of VDW-502 for the delivery of machine tools, the risk for damages/defects is transferred to the machine owner after final acceptance of the machine. This also includes the risk for consequential harms of this defect like: Loss of production capacity, earnings or orders.

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