

CNC Power Engineering

Always on the move



CNC, Drives, and Software Training Catalog 2024

Who has the best expertise in *your* area of business?

The answer is obvious and quite simple: **you are the expert in your field**. Similarly, no one other than NUM could claim to have the deepest expertise of our extended range of drives and CNCs. After all, this has been our business for fifty years. This is why **we** are your number one partner for the training of your teams.

Whether you are an end-user, an OEM, a maintenance specialist or a system builder; NUM has a large variety of all kinds of training sessions in its catalog dedicated to your applications and for all generations of NUM products that are running production on machines today.

Of course, each customer has their own requirements, and each machine and each application has its own special features; and that is why we can also offer customized training sessions that are tailored to focus on your particular and individual needs.

As a provider of CNC High End Applications, we have organized our training sessions by features and level of knowledge required, in order to help you acquire all the information you need to be successful. These sessions are conducted by training specialists and application engineers so you can be assured that you are receiving the most accurate and helpful answers, whatever your question or concern might be. Give us a chance to help you be successful and develop a cooperative relationship between our companies for the benefit of all.

Content list

Content list.....	3
Training with NUM: your advantages	4
Training Centers	4
Training Courses.....	5
Proposed Training Paths.....	7
Course Schedule	8
Your training contacts	8
Course Descriptions.....	9
Flexium system description FXTR101	9
Flexium and Safety FXTR102.....	10
Operation and Diagnostics FXTR201	11
Advanced part programming FXTR202	12
Flexium 3D FXTR213.....	13
Dynamic operators in C FXTR223.....	14
High Speed Cutting – 5-axis functions FXTR233.....	15
Flexium system maintenance with Flexium Tools FXTR301.....	16
Flexium system maintenance without Flexium Tools FXTR321	17
Flexium+ system advanced maintenance FLTR312.....	18
FlexiumPro system advanced maintenance FPTR312	19
NUMDrive X advanced maintenance FLTR314	20
NUM DrivePro advanced maintenance FPTR314.....	21
Flexium+ system initial setup FLTR401.....	22
Flexium+ system advanced setup FLTR402	23
FlexiumPro system initial setup FPTR401	24
FlexiumPro system advanced setup FPTR402.....	25
Extended NCK Access (ENA) FXTR433.....	26
Flexium+ HMI personalization FLTR443	27
Communication with Flexium+ FLTR453.....	28
FlexiumPro HMI personalization FPTR443.....	29
Communication with FlexiumPro FLTR453.....	30
Safety including NUM-SAMX FXTR463.....	31
Axiom Power system maintenance APTR201	32
Individual trainings	33
Seminar	34
Organization	35
Booking form.....	35
Journey to NUM USA.....	36

Training with NUM: your advantages

- All technical data and information is up to date
- If you need to learn about a specific function, you will get in depth information
- Partnership development
- You will be in touch with the experts in every domain of NUM activity
- Whatever your area of expertise might be (Maintenance, Service, Programming, Setup...), you will find the courses you need
- Full range of products and software in one location

Training Centers

All NUM technical centers are equipped to provide training. These sessions will take place either in our premises or in your facility.



Some training facilities



Training Courses

The different training modules are linked in a way to provide a logical path for mastering our application solutions in your area of expertise.

	FX	TR	3	0	1
Control Series					
Flexium ⁺ und FlexiumPro	FX				
Flexium ⁺ only	FL				
FlexiumPro only	FP				
Training					
Type					
Product Knowledge			1		
Operation and Diagnostics			2		
Maintenance			3		
Engineering and Integration			4		
Modifier					
Expertice Level					
Beginner					1
Advanced					2
Specialist					3

Generic Training Sessions

FXTR101	Flexium system description
FXTR102	Flexium and Safety
FXTR201	Operation and basic maintenance
FXTR202	Advanced part programming
FXTR213	Flexium 3D
FXTR223	Dynamic operators in C
FXTR233	High speed cutting – 5-axis functions
FXTR301	Flexium system maintenance with Flexium Tools
FXTR321	Flexium system maintenance without Flexium Tools
FXTR433	Extended NCK Access (ENA)
FXTR463	Safety including NUM-SAMX

Flexium+ Specific Training Sessions

FLTR312	Flexium+ system advanced maintenance
FLTR314	NUMDrive X advanced maintenance
FLTR401	Flexium+ system initial setup
FLTR402	Flexium+ system advanced setup
FLTR443	Flexium+ HMI personalization
FLTR453	Communication with Flexium+

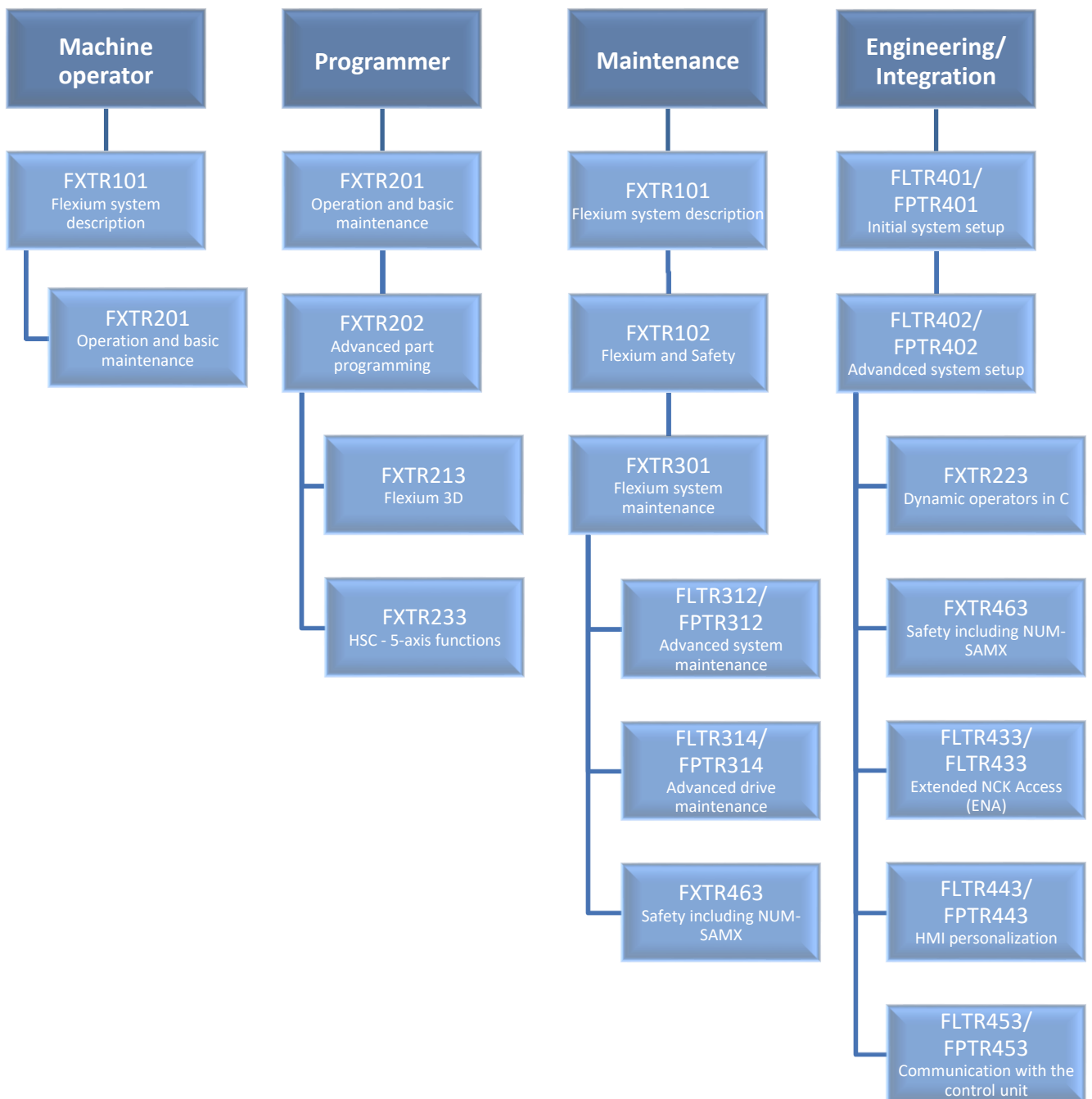
FlexiumPro Specific Training Sessions

FPTR312	FlexiumPro system advanced maintenance
FPTR314	NUM DrivePro advanced maintenance
FPTR401	FlexiumPro system initial setup
FPTR402	FlexiumPro system advanced setup
FPTR443	FlexiumPro HMI personalization
FPTR453	Communication with FlexiumPro

Axium Power Specific Training Session

APTR201	Axium Power system maintenance
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Proposed Training Paths



Course Schedule

CLASS	CLASS TYPE	SYSTEM	1 st QUARTER	2 nd QUARTER	3 rd QUARTER	4 th QUARTER
FXTR201 (2.5 days)	Operations - Basic Programming	Flexium, Flexium+, FlexiumPro	1/22 to 1/24	4/22 to 4/24	7/22 to 7/24	10/21 to 10/23
FXTR202 (2.5 days)	Adv. ISO Programming	Flexium, Flexium+, FlexiumPro	1/24 to 1/26	4/24 to 4/26	7/24 to 7/26	10/23 to 10/25
FXTR301 (2.5 days)	System Maintenance	Flexium, Flexium+, FlexiumPro	1/29 to 1/31		7/29 to 7/31	
FPTR301 (2.5 days)	System Maintenance	FlexiumPro		4/29 to 5/1		10/28 to 10/30
FXTR321 (2.5 days)	System Maintenance	Flexium, Flexium+, FlexiumPro	2/5 to 2/7		8/5 to 8/7	
FPTR401 (5 days)	System Integration	FlexiumPro & MDLUF		5/13 to 5/17		11/18 to 11/22
Seminar	General	FlexiumPro & MDLUF		5/22 (Webinar)		11/6 (Webinar)

- 1- For course that are not listed in the schedule please contact NUM USA directly.
 2- Training for older NUM platform can be schedule as "Individual Training".

Your training contacts

USA:

Engineering Department

Phone: +1 630 505 7722

Fax: +1 630 505 7754

sales.us@num.com

*Switzerland:

Larissa Kühne

Phone: +41 71 335 04 11

Fax: +41 71 333 35 87

sales.ch@num.com

*For other countries, please contact your local sales representative or NUM Switzerland.

Course Descriptions

Flexium system description

FXTR101

Your area of interest	Prerequisite
General knowledge	None
Objectives	Supports
<ul style="list-style-type: none"> ✓ Understanding the Flexium range structure (CNCs and Drives) ✓ Understanding the main functions ✓ Ability to define a configuration with the Flexium catalogue 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Individual components ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Flexium catalogue (on memory stick)
Training Content	
<p>Flexium CNC presentation</p> <ul style="list-style-type: none"> ○ The different models of CNCs ○ Hardware structure – Software functions <p>The panels</p> <ul style="list-style-type: none"> ○ PC Panels ○ Machine panels <p>The PLC</p> <ul style="list-style-type: none"> ○ Structure ○ Programming languages ○ IOs <p>NUMDrive X presentation</p> <ul style="list-style-type: none"> ○ Hardware structure ○ Drives functions and performances ○ Axis and spindle motors 	<p>NUM DrivePro presentation</p> <ul style="list-style-type: none"> ○ Hardware structure ○ Drives functions and performances ○ Axis and spindle motors <p>Tools</p> <ul style="list-style-type: none"> ○ PLC programming ○ Web tools <p>Applications</p> <ul style="list-style-type: none"> ○ From the single unit CNC to the multi CNC - multi panels configurations <p>Questions and answers (1/2 hour)</p>
Duration	Date / Costs
1 day	Please consult your local training contact

Flexium and Safety

Your area of interest	Prerequisite
General knowledge	None
Objectives	Supports
<ul style="list-style-type: none"> ✓ Understanding the Flexium safety concepts ✓ Understanding the various safety features ✓ Ability to define the components and development required for a particular configuration 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Individual components ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Flexium catalogue (on memory stick)
Training Content	
<p>Safety: What is it?</p> <ul style="list-style-type: none"> ○ Safety PLCs ○ Safe motions ○ Safety level <p>General on EtherCAT and FSoE</p> <p>The Safe PLC</p> <ul style="list-style-type: none"> ○ Structure ○ Programming languages ○ I/Os 	<p>Safety and Motions</p> <ul style="list-style-type: none"> ○ SAMX, STOX and NUMDrive X or NUM DrivePro <p>Questions and answers (1/2 hour)</p>
Duration	Date / Costs
1 day	Please consult your local training contact

Operation and Diagnostics

FXTR201

Your area of interest

Machine operator – 1st level maintenance

Prerequisite

Knowledge of NUM products or FXTR101

Objectives

- ✓ Ability to run a machine equipped with Flexium system
- ✓ Understanding and adjusting the coordinate systems and tools offsets
- ✓ Understanding operators message and status indicators to perform a first level maintenance

Supports

Training materials

- Individual components
- Simulator

Deliveries

- Course presentation (on memory stick)
- Programming manual (on memory stick)

Training Content

Operation

- Using the HMI
- Modes of operation
- ISO concepts (interpolation – feedrate – tools offsets – main canned cycles)
- Coordinate systems – programmable axis
- Work preparation, tools offsets, origin presets
- Basic of parametric programming

Maintenance

- Status indicators
- Operators messages
- LED indications
- Backup of essential data
- Adding a system option

Tools

- Web tools
- Flexium license loader

Questions and answers (2 hours)

Duration

2½ days

Date / Costs

Please consult your local training contact

Advanced part programming

Your area of interest	Prerequisite
Advanced part programming – custom macros – special functions for OEM	FXTR201
Objectives	Supports
<ul style="list-style-type: none"> ✓ Mastering the advanced ISO functions of the system ✓ Ability to create a custom macro (tool changer – milling head exchange – probing etc.) 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Individual components ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Programming and advanced programming manual (on memory stick)
Training Content	
<p>Advanced ISO functions</p> <ul style="list-style-type: none"> ○ Polar programming ○ Probing management ○ Pocket cycles ○ Complements on parametric programming <ul style="list-style-type: none"> ▪ Detailed information on E parameters ▪ Relation with the outside via the PLC ○ Structured programming ○ Dynamic operators ○ Customized G codes <p>Exercises</p> <p>Questions and answers</p>	
Duration	Date / Costs
2½ days	Please consult your local training contact

Flexium 3D

FXTR213

Your area of interest	Prerequisite
Machine operation - Programming	Knowledge of NUM products or FXTR201
Objectives	Supports
<ul style="list-style-type: none"> ✓ Using Flexium 3D to simulate and validate a part program ✓ Interacting with Flexium HMI to correct possible programming faults ✓ Optional : Customizing Flexium 3D for machine simulation 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick)
Training Content	
<p>Flexium 3D presentation</p> <ul style="list-style-type: none"> ○ Principle of operation ○ The different screens <p>Running Flexium 3D</p> <ul style="list-style-type: none"> ○ Program configuration ○ Defining the blank and the tools ○ Off line and On line simulation <p>Exercises</p> <p>Optional</p> <ul style="list-style-type: none"> ○ Designing a machine model <p>Questions and answers (2 hours)</p>	
Duration	Date / Costs
1 day + 1 day optional	Please consult your local training contact

Dynamic operators in C

FXTR223

Your area of interest

Customized CNC extensions

Prerequisite

FXTR202 and programming C language

Objectives

- ✓ Develop an application using dynamic operators in C

Supports

Training materials

- Individual components
- Simulator

Deliveries

- Course presentation (on memory stick)
- Flexium catalogue (on memory stick)

Training Content

- Principle of dynamic operators
- Short example using classic dynamic operators
- Review list of parameters
- The compiler
- Examples
- Trace and debug

Duration

1 day

Date / Costs

Please consult your local training contact

High Speed Cutting – 5-axis functions

Your area of interest	Prerequisite
5-axis parts machining	FXTR202
Objectives	Supports
<ul style="list-style-type: none"> ✓ Mastering 5-axis machining functions ✓ RTCP (Rotating Tool Centre Point) ✓ Inclined plane ✓ High speed cutting 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Individual components ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Flexium catalogue (on memory stick)
Training Content	
<ul style="list-style-type: none"> ○ NC 5-axis functions ○ RTCP and inclined plane parameterization ○ Application ○ High speed machining functions ○ Speed and acceleration controls ○ Optimization of parameters 	<ul style="list-style-type: none"> ○ Axis adjustments ○ Flexium Tools instruments ○ Practical case <p>Questions and answers (1/2 hour)</p>
Duration	Date / Costs
2 days	Please consult your local training contact

Flexium system maintenance with Flexium Tools

FXTR301

Your area of interest	Prerequisite
Maintenance	FXTR102
Objectives	Supports
<ul style="list-style-type: none"> ✓ Ability to detect and replace defective components in a short time ✓ Predictive maintenance 	Training materials <ul style="list-style-type: none"> ○ Simulator Deliveries <ul style="list-style-type: none"> ○ Course presentation (on memory stick)
Training Content	
<p>Flexium system maintenance</p> <ul style="list-style-type: none"> ○ System structure ○ Components ○ System start up ○ Diagnostics ○ Software updates ○ Service tool ○ Safety ○ Backup and Restore procedures ○ Part replacement <p>Drives maintenance</p> <ul style="list-style-type: none"> ○ Product knowledge ○ Drives exchange procedure <p>Questions and answers (1 hour)</p>	
Duration	Date / Costs
2½ days	Please consult your local training contact

Flexium system maintenance without Flexium Tools

FXTR321

Your area of interest	Prerequisite
Maintenance	FXTR102
Objectives	Supports
<ul style="list-style-type: none"> ✓ Ability to detect and replace defective components in a short time ✓ Predictive maintenance 	Training materials <ul style="list-style-type: none"> ○ Simulator Deliveries <ul style="list-style-type: none"> ○ Course presentation (on memory stick)
Training Content	
<p>Flexium system maintenance</p> <ul style="list-style-type: none"> ○ System structure ○ Components ○ System start up ○ Diagnostics ○ Software updates ○ Service tool ○ Safety ○ Backup and Restore procedures ○ Part replacement <p>Drives maintenance</p> <ul style="list-style-type: none"> ○ Product knowledge ○ Drives exchange procedure <p>Questions and answers (1 hour)</p>	
Duration	Date / Costs
2½ days	Please consult your local training contact

Flexium+ system advanced maintenance

FLTR312

Your area of interest	Prerequisite
Maintenance	FXTR301
Objectives	Supports
<ul style="list-style-type: none"> ✓ Ability to detect and replace defective components in a short time 	Training materials <ul style="list-style-type: none"> ○ Simulator
<ul style="list-style-type: none"> ✓ Predictive maintenance 	Deliveries <ul style="list-style-type: none"> ○ Course presentation (on memory stick)
Training Content	
Flexium+ system maintenance <ul style="list-style-type: none"> ○ Detailing the product structure ○ Exchange zone ○ Troubleshooting with Flexium HMI ○ Flexium Tools ○ Parameters modification ○ Debugging with the PLC ○ PLC program adjustments ○ Backup and restore 	NUMDrive X advanced maintenance <ul style="list-style-type: none"> ○ Detailed analysis ○ Drives instruments ○ Drives exchange procedure ○ Safety application maintenance Questions and answers (1 hour)
Duration	Date / Costs
3 days	Please consult your local training contact

FlexiumPro system advanced maintenance

FPTR312

Your area of interest

Maintenance

Prerequisite

FXTR301

Objectives

- ✓ Ability to detect and replace defective components in a short time
- ✓ Predictive maintenance

Supports

- Training materials
- Simulator
- Deliveries
- Course presentation (on memory stick)



Training Content

FlexiumPro system maintenance

- Detailing the product structure
- Exchange zone
- Troubleshooting with Flexium HMI
- Flexium Tools
- Parameters modification
- Debugging with the PLC
- PLC program adjustments
- Backup and restore

NUM DrivePro drives advanced maintenance

- Detailed analysis
- Drives instruments
- Drives exchange procedure
- Safety application maintenance

Questions and answers (1 hour)

Duration

3 days

Date / Costs

Please consult your local training contact

NUMDrive X advanced maintenance

FLTR314

Your area of interest	Prerequisite
Machine maintenance	FXTR301
Objectives	Supports
<ul style="list-style-type: none"> ✓ Ability to detect and replace components or adjust parameters 	Training materials <ul style="list-style-type: none"> ○ Simulator Deliveries <ul style="list-style-type: none"> ○ Course presentation (on memory stick)
Training Content	
<p>Review</p> <ul style="list-style-type: none"> ○ Range description ○ Troubleshooting with Flexium HMI <p>Components connections</p> <ul style="list-style-type: none"> ○ Structure of a NUMDrive X application <p>Adjustments</p> <ul style="list-style-type: none"> ○ Using Flexium Tools for diagnostic ○ Main drive parameters ○ Adjustment and control <p>Questions and answers</p>	
Duration	Date / Costs
2½ days	Please consult your local training contact

NUM DrivePro advanced maintenance

FPTR314

Your area of interest

Machine maintenance

Prerequisite

FXTR301

Objectives

- ✓ Ability to detect and replace components or adjust parameters

Supports

- Training materials
 - Simulator
- Deliveries
 - Course presentation (on memory stick)



Training Content

Review

- Range description
- Troubleshooting with FlexiumPro HMI

Components connections

- Structure of a NUM DrivePro application

Adjustments

- Using FlexiumPro Tools for diagnostic
- Main drive parameters
- Adjustment and control

Questions and answers

Duration

2½ days

Date / Costs

Please consult your local training contact

Flexium+ system initial setup

FLTR401

Your area of interest	Prerequisite
Engineering and Setup	FXTR201
Objectives	Supports
<ul style="list-style-type: none"> ✓ Create a first Flexium+ application for a simple machine ✓ Control basic functions – Run two axes and a spindle 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Installation manual – Commissioning manual – Flexium Tools (all on memory stick)
Training Content	
<p>Understanding Flexium+ structure</p> <p>Flexium Tools presentation</p> <ul style="list-style-type: none"> ○ Getting familiar with the package ○ Languages ○ Variables ○ Structure of a project <p>Practical exercise</p> <ul style="list-style-type: none"> ○ Creating the control structure ○ Integrating IOs (CANopen and Ethernet) ○ Integrating a panel ○ Handling modes, manual and automatic commands ○ Operator messages ○ Power on, security ○ Integrating axis and spindle ○ First level of parameterization ○ Running a simple part program ○ Introduction to the custom visualization 	<p>Questions and answers</p>
Duration	Date / Costs
5 days	Please consult your local training contact

Flexium+ system advanced setup

FLTR402

Your area of interest	Prerequisite
Engineering and Setup	FLTR401
Objectives	Supports
<ul style="list-style-type: none"> ✓ Commissioning a Flexium system on any kind of machine 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Full set of Flexium manuals – Flexium Tools – Example project (all on memory stick)
Training Content	
Detailed analysis of exchange variables	Questions and answers
<p>Flexium Tools complements</p> <ul style="list-style-type: none"> ○ Project simulation and debug ○ Application control (Tasks – automated checks) ○ Field bus control ○ Advanced functions (Probing – tool wear – shutdown etc.) ○ Custom screens complements ○ Optional functions (multi NCK – multi panels etc.) ○ Writing custom libraries 	
Duration	Date / Costs
5 days	Please consult your local training contact

FlexiumPro system initial setup

FPTR401

Your area of interest

Engineering and Setup

Objectives

- ✓ Create a first FlexiumPro application for a simple machine
- ✓ Control basic functions – Run two axes and a spindle

Prerequisite

FXTR201

Supports

Training materials

- Simulator

Deliveries

- Course presentation (on memory stick)
- Installation manual – Commissioning manual – Flexium Tools (all on memory stick)



Training Content

Understanding Flexium+ structure

FlexiumPro Tools presentation

- Getting familiar with the package
- Languages
- Variables
- Structure of a project

Practical exercise

- Creating the control structure
- Integrating IOs (CANopen and Ethernet)
- Integrating a panel
- Handling modes, manual and automatic commands
- Operator messages
- Power on, security
- Integrating axes and spindle
- First level of parameterization
- Running a simple part program
- Introduction to the custom visualization

Questions and answers

Duration

5 days

Date / Costs

Please consult your local training contact

FlexiumPro system advanced setup

FPTR402



Your area of interest

Engineering and Setup

Prerequisite

FPTR401

Objectives

- ✓ Commissioning a Flexium system on any kind of machine

Supports

- Training materials
- Simulator
- Deliveries
- Course presentation (on memory stick)
 - Full set of Flexium manuals – Flexium Tools – Example project (all on memory stick)

Training Content

Detailed analysis of exchange variables

Questions and answers

- FlexiumPro Tools complements
- Project simulation and debug
 - Application control (Tasks – automated checks)
 - Field bus control
 - Advanced functions (Probing – tool wear – shutdown etc.)
 - Custom screens complements
 - Optional functions (multi NCK – multi panels etc.)
 - Writing custom libraries

Duration

5 days

Date / Costs

Please consult your local training contact

Extended NCK Access (ENA)

FXTR433

Your area of interest	Prerequisite
Engineering and Setup	FLTR402 or FXTR402
Objectives	Supports
<ul style="list-style-type: none"> ✓ Exchange of additional data between NCK and PLC 	Training materials <ul style="list-style-type: none"> ○ Simulator
	Deliveries <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Flexium Tools – Example project
Training Content	
Structure of internal communication in Flexium systems	
ENA library	
<ul style="list-style-type: none"> ○ Available parameters and functions 	
Application	
<ul style="list-style-type: none"> ○ Reading parameters ○ Writing parameters ○ Files management 	
Questions and answers	
Duration	Date / Costs
2 days	Please consult your local training contact

Flexium+ HMI personalization

FLTR443

Your area of interest

Engineering and Setup

Prerequisite

- FXTR101
- Windows knowledge
- Programming knowledge of script languages

Objectives

- ✓ Creating Flexium HMI custom pages in HTML/JavaScript

Supports

Training materials

- Simulator

Deliveries

- Course presentation (on memory stick)
- Software Development Kit access
- Example (on memory stick)

Training Content

Introduction in the architecture of Flexium+ HMI

Explanation of the Flexium+ HMI components

- FXBrowser
- FXServer
- FXLib
- FXLog

Structure of configuration files

- FXServer.ini
- FXUser.ini

Explanation of the FXServer architecture

- Event handling
- task management
- ...

Abstract of development tools

Exercises related to practice using HTML and JavaScript

- Object instancing of the classes of the development components
- Using of the development components
- Characteristics of the array structure of event classes
- Programming examples

Questions and answers

Duration

3 days

Date / Costs

Please consult your local training contact

Communication with Flexium+

FLTR453

Your area of interest	Prerequisite
<p>Engineering and Setup</p>	<ul style="list-style-type: none"> ○ FXTR101 ○ Windows knowledge ○ Knowledge of object oriented programming (OOP) and use of COM server
Objectives	Supports
<ul style="list-style-type: none"> ✓ Using of FXServer for the communication with the different components of Flexium+. This allows connections to other systems, independent HMIs, etc. to be realized. 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Software Development Kit access ○ Programming examples in C# and C++ (on memory stick)
Training Content	
<p>Introduction in the architecture of FXServer</p> <p>Explanation of the Flexium+ HMI components</p> <ul style="list-style-type: none"> ○ FXBrowser ○ FXServer ○ FXLib ○ FXLog <p>Structure of configuration files</p> <ul style="list-style-type: none"> ○ FXServer.ini ○ FXUser.ini <p>Explanation of the FXServer architecture</p> <ul style="list-style-type: none"> ○ Event handling ○ task management ... 	<p>Exercises related to practice using C#</p> <ul style="list-style-type: none"> ○ Object referencing and instancing of the classes of the development components ○ Using of the development components ○ Characteristics of the array structure of event classes ○ Programming examples <p>Questions and answers</p>
Duration	Date / Costs
<p>2 days</p>	<p>Please consult your local training contact</p>

FlexiumPro HMI personalization

FPTR443

Your area of interest

Engineering and Setup

Objectives

- ✓ Creating FlexiumPro HMI custom pages in C#

Prerequisite

- FXTR101
- Windows knowledge
- Programming knowledge of C#

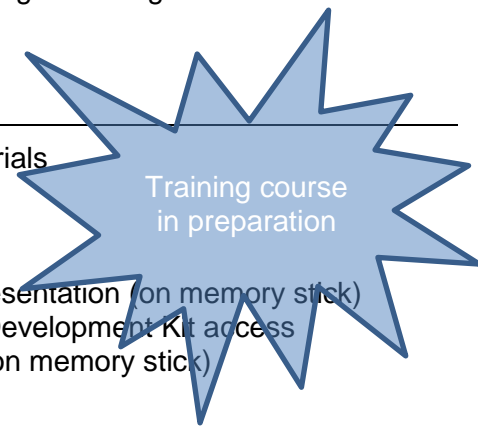
Supports

Training materials

- Simulator

Deliveries

- Course presentation (on memory stick)
- Software Development Kit access
- Example (on memory stick)



Training Content

Introduction in the architecture of FlexiumPro HMI

Explanation of the FlexiumPro HMI architecture

Structure of configuration files

Abstract of development tools

Exercises related to practice using C#

- Programming examples

Questions and answers

Duration

3 days

Date / Costs

Please consult your local training contact

Communication with FlexiumPro

FLTR453

Your area of interest

Engineering and Setup

Objectives

- ✓ Use of the FlexiumPro SDK for communication with the various FlexiumPro components. This allows connections to other systems, independent HMIs, etc. to be realized.

Prerequisite

- FXTR101
- Windows knowledge
- Programming knowledge of C#

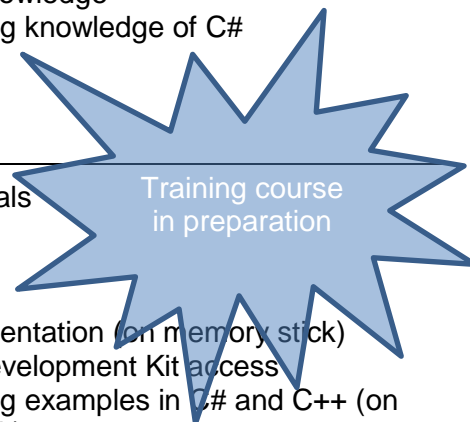
Supports

Training materials

- Simulator

Deliveries

- Course presentation (on memory stick)
- Software Development Kit access
- Programming examples in C# and C++ (on memory stick)



Training Content

Introduction in the architecture of FlexiumPro SDK

Exercises related to practice using C#

- Programming examples

Questions and answers

Duration

2 days

Date / Costs

Please consult your local training contact

Safety including NUM-SAMX

FXTR463

Your area of interest	Prerequisite
Engineering and Setup	FXTR102 or FPTR402
Objectives	Supports
<ul style="list-style-type: none"> ✓ Understand concept. ✓ Program and setup a safety application on a Flexium+ or FlexiumPro system 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Simulator <p>Deliveries</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Software Development Kit access ○ Example (on memory stick)
Training Content	
<p>Hardware structure</p> <p>Safety functions</p> <p>Safety application concept</p> <p>Safe PLC programming</p> <p>Drive functions</p> <ul style="list-style-type: none"> ○ NUM-STOX setup ○ NUM-SAMX setup <p>Questions and answers</p>	
Duration	Date / Costs
2 days	Please consult your local training contact

Axium Power system maintenance

APTR201

Your area of interest

Maintenance

Prerequisite

None

Objectives

- ✓ Ability to detect and replace defective components in a short time
- ✓ Predictive maintenance

Supports

- Training materials
- Simulator
- Deliveries
- Course presentation (on memory stick)

Training Content

Axium Power system maintenance

- System structure
- Components
- System startup
- Diagnostics
- Software updates
- Service tool
- Safety
- Part replacement

Drives maintenance

- Product knowledge
- Drives exchange procedure

Questions and answers (1 hour)

Duration

5 days

Date / Costs

Please consult your local training contact

Individual trainings

Your area of interest	Prerequisite
Something around NUM controls	Depending on the training content
Objectives	Supports
✓ Will be defined with you	Training materials <ul style="list-style-type: none"> ○ Simulator Deliveries <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Example (on memory stick) if available
Training Content	
Will be developed with you	
Duration	Date / Costs
To be defined	Please consult your local training contact

Individual trainings can happen at NUM locations or customer site.

Seminar

Your area of interest	Prerequisite
General	None
Objectives	Supplementary Items
<ul style="list-style-type: none"> ✓ Present NUM's newest innovations in CNC, servo motors and drive technology 	<p>Training materials</p> <ul style="list-style-type: none"> ○ Simulator <p>Media</p> <ul style="list-style-type: none"> ○ Course presentation (on memory stick) ○ Example (on memory stick) if available
Training Content	
<p>Topics include the newest innovations in CNC, servo motors and drive technology. Additional topics include NUM services, maintenance techniques and a range of innovative complete solutions for CNC and machine tool retrofits</p>	
Duration	Date / Costs
0.5 days	<ul style="list-style-type: none"> ○ Refer to Course Schedule ○ Free of charge

Organization

Training Facilities United States

NUM USA	Phone	+1 630 505 7722
603 E. Diehl Road Suite 115	Fax	+1 630 505 7754
Naperville, IL 60563		sales.us@num.com

Cost Contact your local NUM office.

Time Classes begin at 08:30 a.m. and end at about 5:00 p.m., with 1-hour lunch break.

Booking All classes require a minimum of 3 persons. Insufficient enrollment 3 weeks prior to the class date will result in course cancellation.

Student cancellations will not be accepted within 3 weeks prior to the course start date. Student will be invoiced as if attending the course.

Booking form

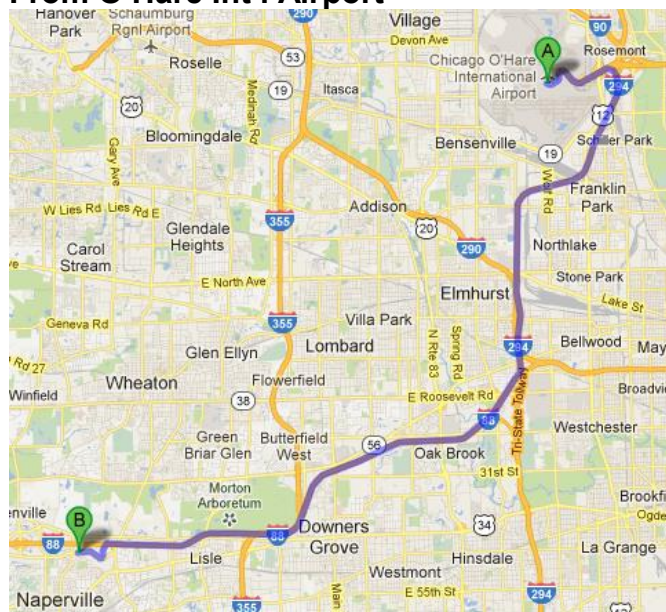
For booking of training, please send an e-mail to sales.us@num.com with the following information:

- Company name
- Contact person
- Phone
- Address
- Purchase order number
- Training number
- Training date
- Training location
- Names of the participants

For other countries, please contact your local sales representative or NUM Switzerland (sales.ch@num.com).

Journey to NUM USA

From O'Hare Int'l Airport

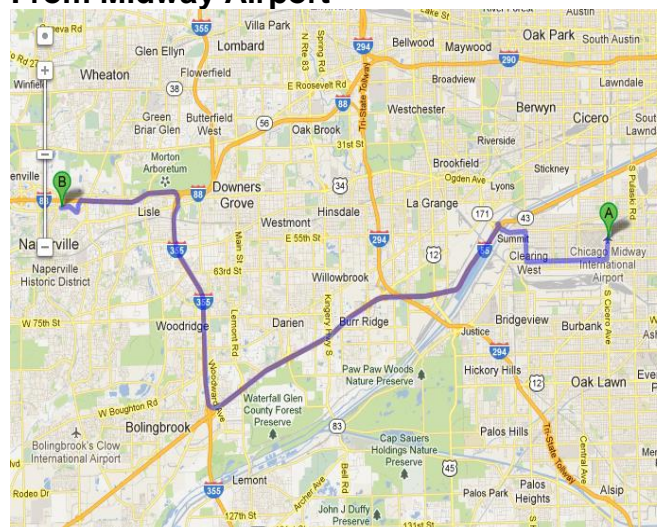


A Chicago O'Hare International Airport
10000 West O'Hare Avenue, Chicago, IL 60666

1. Head southeast
About 2 mins
go 0.5 mi
total 0.5 mi
2. Take the ramp onto I-190 E
About 3 mins
go 1.5 mi
total 2.1 mi
3. Take exit 1D toward I-294 S/Indiana/S Tollway
go 0.4 mi
total 2.4 mi
4. Merge onto I-294 S
Partial toll road
About 11 mins
go 8.7 mi
total 11.2 mi
5. Take the Interstate 88 West E-W Tollway exit toward Aurora
Toll road
go 0.4 mi
total 11.6 mi
6. Merge onto I-88 W
Toll road
About 15 mins
go 11.9 mi
total 23.5 mi
7. Take the exit toward Naperville Road
About 1 min
go 0.5 mi
total 23.9 mi
8. Turn left onto Freedom Dr
About 1 min
go 0.4 mi
total 24.3 mi
9. Turn right onto E Diehl Rd
Destination will be on the left
About 2 mins
go 0.7 mi
total 25.0 mi

B Num Corporation
603 E Diehl Rd, Naperville, IL 60563

From Midway Airport



A Midway International Airport
5700 S Cicero Ave, Chicago, IL 60638

1. Head south on S Cicero Ave
About 1 min
go 0.7 mi
total 0.7 mi
2. Turn right onto W 63rd St
About 7 mins
go 3.0 mi
total 3.7 mi
3. Turn right onto S Harlem Ave
About 2 mins
go 1.0 mi
total 4.7 mi
4. Turn left onto S Archer Ave
About 2 mins
go 0.7 mi
total 5.4 mi
5. Continue onto IL-171 N
go 0.4 mi
total 5.8 mi
6. Take the I-55 S ramp to St Louis
go 0.4 mi
total 6.2 mi
7. Keep left at the fork and merge onto I-55 S
About 13 mins
go 12.2 mi
total 18.4 mi
8. Take exit 269 for Interstate 355 Tollway N/Interstate 355 Tollway S toward Northwest Suburbs/Southwest Suburbs
Toll road
go 0.4 mi
total 18.7 mi
9. Keep right at the fork, follow signs for Interstate 355 N/Northwest Suburbs and merge onto I-355 N
Toll road
About 7 mins
go 6.7 mi
total 25.4 mi
10. Take the exit toward Aurora
Toll road
About 2 mins
go 1.5 mi
total 27.0 mi
11. Merge onto I-88 W
Toll road
About 3 mins
go 2.6 mi
total 29.6 mi
12. Take the exit toward Naperville Road
About 1 min
go 0.5 mi
total 30.0 mi
13. Turn left onto Freedom Dr
About 1 min
go 0.4 mi
total 30.4 mi
14. Turn right onto E Diehl Rd
Destination will be on the left
About 2 mins
go 0.7 mi
total 31.2 mi

B Num Corporation
603 E Diehl Rd, Naperville, IL 60563

Hotels with NUM discount

Hampton Inn

1087 E. Diehl Road
(630) 505-1400

Continental breakfast included. Area shuttle, exercise room and seasonal outdoor pool available. Ask for NUM USA rate to get a 25% discount.

Hotel Indigo Naperville Riverwalk - Downtown

120 Water Street
(630) 778 9676

Some customers prefer this downtown River walk location with walking distance to shopping, restaurants, bars, etc... The Hotel has free wifi with full service restaurant serving breakfast, lunch, dinner, exercise room, free weights and cardio equipment. Complimentary shuttle service to and from NUM offices and within 5 mile radius of hotel - based upon availability. Ask for the NUM Corporation rate. 15-25% off. (Corp ID 786866549, IATA# 99502056)