CNC Power Engineering
Always on the move

CNC and Drives
Training catalogue 2023

www.num.com
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.
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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.
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.

<table>
<thead>
<tr>
<th>Control Series</th>
<th>FX</th>
<th>TR</th>
<th>3</th>
<th>0</th>
<th>1</th>
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<tbody>
<tr>
<td>Generic</td>
<td>FX</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Flexium only</td>
<td>FL</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Flexium+ only</td>
<td>FP</td>
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<table>
<thead>
<tr>
<th>Training Type</th>
<th>Modifier Expertice Level</th>
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<tbody>
<tr>
<td>Product Knowledge</td>
<td>Beginner 1</td>
</tr>
<tr>
<td>Operation and Diagnostics</td>
<td>Advanced 2</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Specialist 3</td>
</tr>
<tr>
<td>Engineering and Integration</td>
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</table>

Generic Training Sessions

<table>
<thead>
<tr>
<th>Session Code</th>
<th>Session Title</th>
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</thead>
<tbody>
<tr>
<td>FXTR 101</td>
<td>Flexium system description</td>
</tr>
<tr>
<td>FXTR 102</td>
<td>Flexium and Safety</td>
</tr>
<tr>
<td>FXTR 201</td>
<td>Operation and basic maintenance</td>
</tr>
<tr>
<td>FXTR 202</td>
<td>Advanced part programming</td>
</tr>
<tr>
<td>FXTR 213</td>
<td>Flexium 3D</td>
</tr>
<tr>
<td>FXTR 223</td>
<td>Dynamic operators in C</td>
</tr>
<tr>
<td>FXTR 233</td>
<td>High speed cutting – 5 axes functions</td>
</tr>
<tr>
<td>FXTR 301</td>
<td>Flexium system maintenance with Flexium Tools</td>
</tr>
<tr>
<td>FXTR 321</td>
<td>Flexium system maintenance without Flexium Tools</td>
</tr>
<tr>
<td>FXTR 433</td>
<td>Extended NCK Access (ENA)</td>
</tr>
<tr>
<td>FXTR 443</td>
<td>Flexium HMI personalization</td>
</tr>
</tbody>
</table>
### Flexium-Specific Training Sessions

| FLTR 312 | Flexium advanced maintenance |

### Flexium+-Specific Training Sessions

| FPTR 312 | Flexium+ system advanced maintenance |
| FPTR 314 | NUMDrive X advanced maintenance |
| FPTR 401 | Flexium+ system initial setup |
| FPTR 402 | Flexium+ system advanced setup |
| FPTR 463 | Safety including NUM-SAMX |

### Axium Power-Specific Training Session

| APTR 201 | Axium Power system maintenance |
Proposed Training Paths

Machine operator
- FXTR 101
- FXTR 201
- FXTR 202
- FXTR 213
- FXTR 233

Programmer
- FXTR 201
- FXTR 202

Maintenance
- FXTR 101
- FXTR 102
- FXTR 301
- FLTR 312/FPTR 312
- FPTR 314
- FPTR 463
- FXTR 321

Engineering/Integration
- FPTR 401
- FPTR 402
- FPTR 463
- FXTR 223
- FPTR 433
- FXTR 443
# Course Schedule

<table>
<thead>
<tr>
<th>CLASS</th>
<th>CLASS TYPE</th>
<th>SYSTEM</th>
<th>1st QUARTER</th>
<th>2nd QUARTER</th>
<th>3rd QUARTER</th>
<th>4th QUARTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXTR 201</td>
<td>Operations - Basic</td>
<td>Flexium &amp;</td>
<td>1/23 to 1/25</td>
<td>4/24 to 4/26</td>
<td>7/24 to 7/26</td>
<td>10/23 to 10/25</td>
</tr>
<tr>
<td>(2.5 days)</td>
<td>Programming</td>
<td>Flexium*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2.5 days)</td>
<td>Programming</td>
<td>Flexium*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXTR 301</td>
<td>System Maintenance</td>
<td>Flexium &amp;</td>
<td>1/30 to 2/1</td>
<td></td>
<td>7/31 to 8/2</td>
<td></td>
</tr>
<tr>
<td>(2.5 days)</td>
<td>System Maintenance</td>
<td>Flexium*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPTR 301</td>
<td>System Maintenance</td>
<td>Flexium*</td>
<td></td>
<td>5/1 to 5/3</td>
<td></td>
<td>10/30 to 11/1</td>
</tr>
<tr>
<td>(2.5 days)</td>
<td>System Maintenance</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXTR 321</td>
<td>System Maintenance</td>
<td>Flexium &amp;</td>
<td>2/6 to 2/8</td>
<td></td>
<td>8/7 to 8/9</td>
<td></td>
</tr>
<tr>
<td>(2.5 days)</td>
<td>Flexium* System</td>
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</tr>
<tr>
<td>FPTR 401</td>
<td>Flexium* System</td>
<td>Flexium* &amp;</td>
<td></td>
<td>5/15 to 5/19</td>
<td></td>
<td>11/27 to 12/1</td>
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<tr>
<td>(5 days)</td>
<td>Integration</td>
<td>MDLUX</td>
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<tr>
<td>Seminar</td>
<td>General</td>
<td>Flexium* &amp;</td>
<td></td>
<td>5/24</td>
<td></td>
<td>11/8</td>
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<tr>
<td></td>
<td></td>
<td>MDLUX (Webinar)</td>
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</tbody>
</table>

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

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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

Your area of interest
General knowledge

Prerequisite or Equivalent Knowledge
None

Objectives
✓ Understanding the Flexium range structure (CNCs and Drives)
✓ Understanding the main functions
✓ Ability to define a configuration with the Flexium catalogue

Supports
Training materials
- Individual components
- Simulator

Deliveries
- Course presentation (printed and .pdf on CD)
- Flexium catalogue (on CD)

Training Content

Flexium CNC presentation
- The different models of CNCs
- Hardware structure – Software functions

The panels
- PC Panels
- Machine panels

The PLC
- Structure
- Programming languages
- IOs

NUMDrive C presentation
- Hardware structure
- Drives functions and performances
- Axes and spindle motors

NUMDrive X presentation
- Hardware structure
- Drives functions and performances
- Axes and spindle motors

Tools
- PLC programming
- Web tools

Applications
- From the single unit CNC to the multi CNC - multi panels configurations

Questions and answers (1/2 hour)

Duration
1 day

Date / Costs
Please consult your local training contact
### Flexium and Safety

**FXTR 102**

#### Your area of interest
General knowledge

#### Prerequisite or Equivalent Knowledge
FXTR101

#### Objectives
- Understanding the Flexium and Flexium+ safety concepts
- Understanding the various safety features
- Ability to define the components and development required for a particular configuration

#### Supports
- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Flexium catalogue (on CD)

#### Training Content

<table>
<thead>
<tr>
<th>Safety: What is it?</th>
<th>Safety and Motions</th>
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</thead>
<tbody>
<tr>
<td>- Safety PLCs</td>
<td>- SAM, STO and NUMDrive C</td>
</tr>
<tr>
<td>- Safe motions</td>
<td>- SAMX, STOX and NUMDrive X</td>
</tr>
<tr>
<td>- Safety level</td>
<td>Questions and answers (1/2 hour)</td>
</tr>
</tbody>
</table>

General on EtherCAT and FSoE

The Safe PLC
- Structure
- Programming languages
- I/Os

#### Duration
1 day

#### Date / Costs
Please consult your local training contact
# Operation and Diagnostics

**FXTR 201**

## Your area of interest

- Machine operator – 1st level maintenance

## Prerequisite or Equivalent Knowledge

- FXTR101 or equivalent

## 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 (printed and .pdf on CD)
  - Programming manual (CD)

## Training Content

### Operation

- Using the HMI
- Modes of operation
- ISO concepts (interpolation – feedrate – tools offsets – main canned cycles)
- Coordinate systems – programmable axes
- 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

### Duration

- 2.5 days

### Tools

- Web tools
- Flexium license loader

### Questions and answers (2 hours)

## Date / Costs

- Please consult your local training contact
# Advanced part programming

## FXTR 202

### Your area of interest

Advanced part programming – custom macros – special functions for OEM

### Prerequisite or Equivalent Knowledge

FXTR201

### Objectives

- Mastering the advanced ISO functions of the system
- Ability to create a custom macro (tool changer – milling head exchange – probing etc.)

### Supports

- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Programming and advanced programming manual (CD)

### Training Content

**Advanced ISO functions**
- Polar programming
- Probing management
- Pocket cycles
- Complements on parametric programming
  - Detailed information on E parameters
  - Relation with the outside via the PLC
- Structured programming
- Dynamic operators
- Customized G codes

### Exercises

Questions and answers

### Duration

2.5 days

### Date / Costs

Please consult your local training contact
Flexium 3D

Your area of interest
Machine operation - Programming

Prerequisite or Equivalent Knowledge
FXTR202

Objectives
- Using Flexium 3D to validate a part program
- Interacting with Flexium HMI to correct possible programming faults
- Optional: Customizing Flexium 3D for machine simulation

Supports
- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)

Training Content
- Flexium 3D presentation
  - Principle of operation
  - The different screens
- Running Flexium 3D
  - Program configuration
  - Defining the blank and the tools
  - Off line and On line simulation
- Exercises
  - Optional
    - Designing a machine model
- Questions and answers (2 hours)

Duration
1 day + 1 day optional

Date / Costs
Please consult your local training contact
# Dynamic operators in C

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>General knowledge</td>
<td>FXTR202 and programming C language</td>
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</table>

## Objectives
- ✔ Develop an application using dynamic operators in C

## 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

## Supports
- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Flexium catalogue (on CD)

## Date / Costs
- Please consult your local training contact
# High Speed Cutting – 5 axes functions

**FXTR 233**

## Your area of interest
General knowledge

## Prerequisite or Equivalent Knowledge
FXTR202 or FPTR 401

## Objectives
- Mastering 5 axes machining functions
- RTCP (Rotating Tool Centre Point)
- Inclined plane
- High speed cutting

## Supports
- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Flexium catalogue (on CD)

## Training Content
- NC 5 axes functions
- RTCP and inclined plane parameterization
- Application
- High speed machining functions
- Speed and acceleration controls
- Optimization of parameters
- Axes adjustments
- Flexium tools instruments
- Practical case
- Questions and answers (1/2 hour)

## Duration
2 days

## Date / Costs
Please consult your local training contact
## Flexium system maintenance with Flexium Tools

**FXTR 301**

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
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<tbody>
<tr>
<td>Maintenance</td>
<td>FXTR102</td>
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</table>

### Objectives

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

### Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)

### Training Content

- Flexium system maintenance
  - System structure
  - Components
  - System startup
  - Diagnostics
  - Software updates
  - Service tool
  - Safety
  - Backup and Restore procedures
  - Part replacement

- Drives maintenance
  - Product knowledge
  - Drives exchange procedure

- Questions and answers (1 hour)

### Duration

<table>
<thead>
<tr>
<th>Date / Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 days</td>
</tr>
<tr>
<td>Please consult your local training contact</td>
</tr>
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16
Flexium system maintenance without Flexium Tools

FXTR 321

Your area of interest

Maintenance

Prerequisite or Equivalent Knowledge

FXTR102

Objectives

☑ Ability to detect and replace defective components in a short time

☑ Predictive maintenance

Supports

Training materials

○ Simulator

Deliveries

○ Course presentation (printed and .pdf on CD)

Training Content

Flexium system maintenance

○ System structure

○ Components

○ System startup

○ Diagnostics

○ Software updates

○ Service tool

○ Safety

○ Backup and Restore procedures

○ Part replacement

Drives maintenance

○ Product knowledge

○ Drives exchange procedure

Questions and answers (1 hour)

Duration

2.5 days

Date / Costs

Please consult your local training contact
<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Flrexium system advanced maintenance</th>
<th>FLTR 312</th>
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<tbody>
<tr>
<td>Maintenance</td>
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<table>
<thead>
<tr>
<th>Prerequisite or Equivalent Knowledge</th>
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<tbody>
<tr>
<td>FXTR301</td>
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</tbody>
</table>

### Objectives

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

### Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)

### Training Content

#### Flexium 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

#### NUMDrive C 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
### Flexium+ system advanced maintenance  
**FPTR 312**

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
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</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>FXTR301</td>
</tr>
</tbody>
</table>

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

#### Supports
- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)

#### Training Content
- **Flexium+ 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

- **NUMDrive X 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

## FPTR 314

### Your area of interest
- Machine maintenance

### Prerequisite or Equivalent Knowledge
- FXTR301

### Objectives
- ✓ Ability to detect and replace components or adjust parameters

### Supports
- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)

### Training Content

**Review**
- Range description
- Troubleshooting with Flexium HMI

**Components connections**
- Structure of a NUMDrive X application

**Adjustments**
- Using Flexium Tools for diagnostic
- Main drive parameters
- Adjustment and control

**Questions and answers**

### Duration
- 2.5 days

### Date / Costs
- Please consult your local training contact
# Flexium+ System Initial Setup

## Your Area of Interest

- Engineering and Setup

## Prerequisite or Equivalent Knowledge

- FXTR201

## Objectives

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

## Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Installation manual – Commissioning manual
  - Flexium Tools (all on CD)

## Training Content

### Understanding Flexium+ Structure

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

### Practical Exercise

- Creating the machine 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
<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Setup</td>
<td>FPTR 401</td>
</tr>
</tbody>
</table>

**Objectives**

- ✔ Commissioning a Flexium system on any kind of machine

**Supports**

- Training materials
  - Simulator

**Deliveries**

- Course presentation (printed and .pdf on CD)
- Full set of Flexium manuals – Flexium Tools – Example project (all on CD)

**Training Content**

- Detailed analysis of exchange variables
- Flexium 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
- Questions and answers

**Duration**

- 5 days

**Date / Costs**

- Please consult your local training contact
## Extended NCK Access (ENA)  
**FXTR 433**

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Setup</td>
<td>FPTR402</td>
</tr>
</tbody>
</table>

### Objectives

- Exchange of additional data between NCK and PLC

### Supports

- Training materials
  - Simulator

- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Flexium Tools – Example project

### Training Content

- Structure of internal communication in Flexium systems
- ENA library
  - Available parameters and functions

- Application
  - Reading parameters
  - Writing parameters
  - Files management

- Questions and answers

### Duration

2 days

### Date / Costs

Please consult your local training contact
## Flexium HMI personalization

### Your area of interest

**Engineering and Setup**

### Prerequisite or Equivalent Knowledge

- FXTR101
- Windows knowledge
- Programming knowledge of script languages

### Objectives

- Creating Flexium HMI custom pages in HTML/JavaScript

### Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Software Development Kit access
  - Example (on CD)

### 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

**FXTR 453**

## Your area of interest

### Engineering and Setup

### Prerequisite or Equivalent Knowledge

- FXTR101
- Windows knowledge
- Knowledge of object oriented programming (OOP) and use of COM server

## Objectives

- Using of FXServer for the communication with the different components of Flexium

## Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Software Development Kit access
  - Programming examples in C# and C++ (on CD)

## Training Content

- Introduction in the architecture of FXServer
- Explanation of the Flexium components (FXServer, FXLib, FXLog) and configuration file (FXServer.ini)
- Explanation of the FXServer architecture (Event handling, task management, …)

## Exercises related to practice using C#

- 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

## Questions and answers

## Duration

<table>
<thead>
<tr>
<th>Date / Costs</th>
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<tbody>
<tr>
<td>3 days</td>
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<table>
<thead>
<tr>
<th>Please consult your local training contact</th>
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</table>
## Safety including NUM-SAMX

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Setup</td>
<td>FXTR102 or FPTR402</td>
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</table>

### Objectives

- ✓ Understand concept.
- ✓ Program and setup a safety application on a Flexium system

### Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (printed and .pdf on CD)
  - Software Development Kit access
  - Example (on CD)

### Training Content

- Hardware structure
- Safety functions
- Safety application concept
- Safe PLC programming
  - Drive functions
    - NUM-STOX setup
    - NUM-SAMX setup
- Questions and answers

### Duration

- 2 days

### Date / Costs

- Please consult your local training contact
### Axium Power system maintenance  
**APTR 201**

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>None</td>
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</table>

#### Objectives

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

#### Training Content

- Axium 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**

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
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</thead>
<tbody>
<tr>
<td>Something around NUM controls</td>
<td>Depending on the training content</td>
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</table>

**Objectives**

- ✓ Will be defined with you

**Supports**

- Training materials
  - Simulator

  **Deliveries**
  - Course presentation (printed and .pdf on CD)
  - Example (on CD) if available

**Training Content**

Will be developed with you

**Duration**

To be defined

**Date / Costs**

Please consult your local training contact

Individual trainings can happen at NUM locations or customer site.
## Seminar

<table>
<thead>
<tr>
<th>Your area of interest</th>
<th>Prerequisite or Equivalent Knowledge</th>
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</thead>
<tbody>
<tr>
<td>General</td>
<td>None</td>
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</tbody>
</table>

### Objectives

- Present NUM's newest innovations in CNC, servo motors and drive technology

### Supplementary Items

- Training materials
  - Simulator
- Media
  - Course presentation (.pdf on USB)
  - Example (on USB) if available

### Training Content

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.

### Duration

0.5 days

### Date / Costs

- Refer to Course Schedule
- Free of charge
## Organization

### Training Facilities  **United States**

<table>
<thead>
<tr>
<th>Company</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUM USA</td>
<td>603 E. Diehl Road Suite 115</td>
<td>+1 630 505 7722</td>
<td>+1 630 505 7754</td>
<td><a href="mailto:sales.us@num.com">sales.us@num.com</a></td>
</tr>
<tr>
<td></td>
<td>Naperville, IL 60563</td>
<td></td>
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### 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).
Hotel 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 Riverwalk 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)