PLM EDUCATIONAL SERVICES
FOR SIEMENS PLM SOFTWARE

Swoosh Technologies & Solutions

TRAINING COURSE CATALOG

Hello! We're Swoosh Technologies.

The Originators of Process Based Training

The best training isn't always about tips and menu picks. We believe knowing every detail about a feature inside and out doesn't necessarily lead to a great aftermath for the user who's taking it back to the production process. That's why we take a different approach to getting you up to speed on your chosen Siemens PLM Software program.

For nearly two decades, our dedicated team of instructors have emphasized process based training in their practice and have continued to change the way designers and manufacturers learn and leverage these tools.

We offer complete process based training courses in product design, manufacturing, simulation, and product data management from our professionally trained team who bring best practices and practical industry experience to CAD/CAM/CAE/PLM users like you.

Whether you're a beginner or an advanced user, expect to go beyond the basics with our team - no matter which course you decide to take with us.

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your process makes the training difference

Our team gets it: tips and menu picks are cool to learn, but what value does it provide a design engineer or manufacturer other than trivial pursuit?

Our instructors come with hands-on experience in the field and offer engineers an in-depth look of the true benefits and capabilities of your chosen CAD, CAM, PDM, and CAE programs. Instead of providing step-by-step instructions on how to use a feature, our instructors focus on how, why, and when a feature will benefit your everyday workflow.

WHAT MAKES OUR TRAINING DIFFERENT

process based

It's all about the bigger picture. We don't want you to *just* know *how to use* a feature. We want you to understand how you can implement a feature into your own process.

With our process based training approach, we start with your desired outcome and focus on the necessary features and steps to get to your end goal:

An Overview with Objectives
- General overview replaced with objectives
- Starts with your desired outcome and focuses on necessary steps

Activity Based
- Reinforces lecture based with supporting workbook
- Increases retention by process focus

Actionable Results
- Process Based creates superior product retention
- Time to focus on higher order applications
- Helps prevent slippage to older methods used previously

THAN THE COMPETITORS?

v. traditional based

Traditional based training focuses on the clicks and menu picks of functions and commands. Whether or not it is an essential feature to your workflow, time is spent focused on every aspect of a command.

This dated approach does not allow for easy knowledge transfer or the the development of best practices with NX, as the process is not defined:

An Overview of the Complete Software Tool
- General overview of features and out of scope areas
- Too much to cover

Feature Options
- Dig deep into features and its capabilities and hope to find a good fit for it to be used
- No actual applications to reinforced with feature knowledge

Menu Selections
- Commands, menu picks, and syntax of individual functions
- No application to a process

the value of training your manufacturers

A solid training plan is essential to the success of your productivity. Trained software users can take full advantage of the programs and features at their fingertips - allowing them to complete tasks more effectively and efficiently.

“a boost in our production”

The training provided by Swoosh was a tremendous boost in our production. By being able to now utilitze all of the new functionallity improvements that NX offers, we have reduced design time by 15% in most cases.

Gibbs Die Casting

Proper software training saves time and money. Users trained correctly avoid making repeated mistakes. This saves time adjusting or reworking errors.

Every company is unique. That’s why we offer customized training courses suited to your specific needs for users of all levels in numerous Siemens PLM Software platforms - assuring your users are instructed on your products.

4 REASONS WHY

investing in training

IS A MUST FOR YOUR COMPANY'S RETURN ON INVESTMENT

When working with complex software, obstacles are guaranteed to rise. Proper training helps prepare your users in tackling the challenges face and work around these issues, while ultimately finding a solution to better your process.

Our team of instructors tailor each training course to aid users of all levels in numerous Siemens PLM Software platforms and can assure your CAD/CAM/PLM users are instructed on your products.

Enhance Company Profits

Based on training investments of 575 companies during a 3-year period, researchers found that manufacturers investing the most in training yielded 36.9 percent total shareholder return - compared to 25.5 percent weighted return for the S&P 500 index of the same period.

Save Supervisory and Administrative Time and Costs

The less time a manager has to spend on monitoring and guiding employees, the more time is freed up for more profitable activities. Provide peace of mind knowing that duplication efforts and time spent correct mistakes are out of the hands of managers.

Improve Employee Performance

Performance problems occur due to employee confusion on what, how, and why to do something in the production process. Without proper training, companies are more than three times likely to lose their best employees.

Keep Your Competitive Advantage

Companies must recognize that not only is the human capital of their employees a major asset, it is also a depreciating asset that needs continuing investment. Keeping worker skills updated keeps a company in the running.

how will you train with us?

in the classroom

Join our certified instructor in a classroom-based environment near you. No matter the class you choose from our online training schedule, expect the tools you need to excel to the next level with your software.

virtual student

Can't make the classroom? We offer online training during our scheduled classroom training. You'll have full access to the course and get the training needed from our expert instructor.

see you onsite

Our educational services can be delivered at your location. We also provide the necessary training equipm ent for your group at no additional cost.

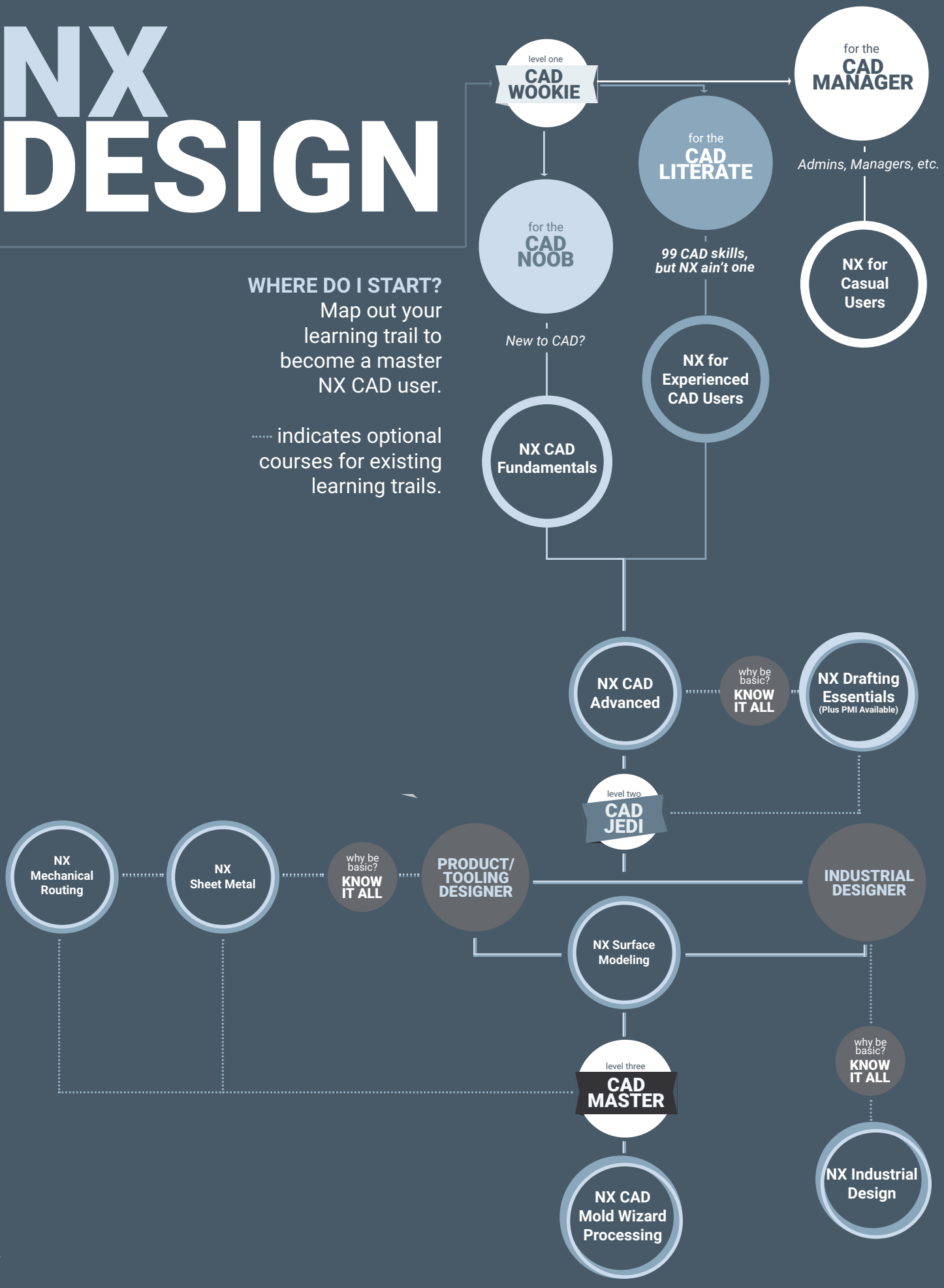
1:1 mentor

Get one on one training with one of our knowledgable instructors. Our team is always here to help guide you with solutions proven to push your productivity.

NX DESIGN

WHERE DO I START?
Map out your learning trail to become a master NX CAD user.

..... indicates optional courses for existing learning trails.



NX CAD Fundamentals (TR10200)
5 Day Class

Designed for students with minimal to no prior CAD experience, this course will establish NX competencies for beginners looking to better understand CAD applications. Students will master NX 3D parametric modeling, assembly structures, and detail drafting applications necessary for product and tool design. The Master Model approach is explored, as well as the foundation for interpart associativity.

Topics:
• NX User Interface and Gateway Application
• Part File Interrogation
• Assembly Modeling
• Sketching
• Feature Modeling and Editing
• Datum Features
• Design Features
• Detail Features
• Synchronous Modeling
• Drafting (Master Modl / Non-Master Model)

Prerequisites:
None

NX for Experienced CAD Users (TR10300)
5 Day Class

Proficient users of other (non-NX) CAD systems will cover all essential areas of NX CAD applications. Regardless of skill level, students gain insight into NX capabilities, comparable functionality, and state-of-the-art techniques not found in other software products. Creating 3D parametric models, sheet and non-analytical modeling elements, multi-faceted assembly structures, and intricate drafting procedures are also covered.

Topics:
• NX User Interface and Gateway Application
• Assemblies
• Sketching
• Feature Modeling and Editing
• Datum Features
• Detail Features
• Design in Context
• Synchronous Modeling
• Advanced Curve Modeling
• Drafting
• Data Exchange
• Part File Interrogation

Prerequisites:
Experience with 3D Modeling

NX CAD Advanced (TR10250)
4 Day Class

Increase NX CAD capabilities for product design while applying advanced NX functionality. Upon completion, users will achieve proficiency and comprehensive mastery of parametric solid and surface modeling, interdependent assembly structures, and insight into integrating aesthetic elements in 3D models.

Topics:
• Data Exchange and Synchronous Modeling
• Advanced Curve Modeling
• Spline Creation and Analysis Operations
• Surface Modeling Operations
• Styling Features
• Editing Surface Shapes
• Intermediate Sheet Metal
• Design Reuse
• Design in Context
• Assembly

Prerequisites:
• NX CAD Fundamentals (TR10200) OR
NX for Experienced CAD Users (TR10300)
• Equivalent NX Experience

NX for Casual Users (TR10350)
2 Day Class

This course provides new NX users through the lighter side of state-of-the-art CAD technology - without complicated parametrics. Users who reference CAD data routinely will benefit from the data awareness processes and CAD techniques. CAD data, interrogating models, creating elementary models, navigating assembly structures, and understanding broad-spectrum drafting procedures are covered.

Topics:
• Interface and Gateway Application
• Part File Interrogation
• Basic Assemblies
• Basic Feature Modeling and Editing
• Drafting

Prerequisites:
None

NX CAD Update (TR10800)
2 or 3 Day Class (Dependent on NX version)

With combinations ranging from the earliest versions of NX to the latest release, veteran NX users can easily transition to a later NX software version. Course content varies and is dependent on NX software version from which user is transitioning to. Most facet of CAD application are revealed, including customization and configuration concepts, premier assembly techniques, and industry-wide CAD drafting procedures.

Topics:
• Gateway and Visualization
• Sketching
• Feature Modeling
• Assemblies
• Advanced Curve Modeling
• Surface Modeling
• Sheet Metal
• Synchronous Modeling
• Drafting

Prerequisites:
None

NX Surface Modeling (TR10265)*
3 Day Class

Learn to apply advanced NX functionality to achieve non-analytical shapes. Users will achieve proficiency and comprehensive master of parametric solid and surface modeling, interdependent assembly structures, and insight into integrating aesthetic elements into 3D models.

Topics:
- Freeform Overview
- Advanced Curve Operations
- Creating and Editing Spines
- Curve Analysis
- Mesh Features
- Surface Operations
- Sweep Features
- Blending
- Visualization and Rendering
- Special/Custom Topics

Prerequisites:
- NX CAD Fundamentals (TR10200) OR NX for Experienced CAD Users (TR10300)
- NX CAD Advanced (TR10250)

NX Industrial Design (TR10275)**
4 Day Class

This course presents contouring tools within NX modeling that are suited for creating styled shapes from Shape Studio functionality for freeform modeling, technical evaluation, and visualization development. Despite similar topics to the Surface Modeling couse, users will learn many more commands and options as well as techniques in developing desired associativity and dependencies.

Topics:
- Freeform Overview
- Advanced Curve Operations
- Creating and Editing Splines
- Mesh Features
- Blending
- Visualization and Rendering
- Special/Custom Topics

Prerequisites:
- NX CAD Fundamentals (TR10200) OR NX CAD for Experienced CAD Users (TR10300)
- NX CAD Advanced (TR10250)

NX Drafting Essentials (TR10450)
3 Day Class

Address the proper user of NX drafting essentials and approaches to 2D and 3D drafting processes in practice today. This course is written for new CAD users and covers essentials and differences between 3D model space and 2D drawing sheet. Producing high-level NX drafting functionality, associative dimensions, tables, and exploded views are covered.

Topics:
- Introduction to NX
- Drawing Prep
- Drawing Sheets and Views
- Legacy Drawings and 2D Drafting
- Drafting Symbols, Dimensions, and Annotations
- Assembly Documentation

Prerequisites:
None

NX Drafting Essentials Plus PMI (TR10460)
3 Day Class

Like Drafting Essentials, this course teaches users the proper uses of NX drafting tools while addressing most approaches to 2D and 3D drafting processes in practice today. Essentials of the interface and the difference between 3D model space and a 2D drawing sheet are clearly explained.

In addition to the high-level NX drafting functionality of associative dimensions, tables, and exploded views, PMI is also extensively covered.

Topics:
- Introduction to NX
- Drawing Prep
- Drawing Sheets and Views
- Legacy Drawings and 2D Drafting
- Drafting Symbols, Dimensions, and Annotations
- Assembly Documentation
- PMI

Prerequisites:
None

** The NX Surface Modeling course is designed for customers who do not posess the functionality included in the Freeform 2 and Shape Studio licenses - such as the Mach 2 and Mach 3 license bundles.*

*** The NX Industrial Design course is designed for users who posess the functionality included in the Freeform 2 and Shape Studio licenses (such as the Mach 2 and Mach 3 license bundles) and who deal with product design focused on aesthetics and styling rather than fabrication processes.*

NX Sheet Metal (TR10550)
2 Day Class

This course focuses on the usage of the NX Sheet Metal functionality for the design of both straight brake and contoured sheet metal parts. Experienced users of NX modeling will benefit from the comprehensive approaches in the development of flange-based bent, cutout and corner configuration modeling concepts. Unbend/rebend concepts are also covered.

Topics:
• Introduction to Sheet Metal
• Setting Sheet Metal Preferences
• Converting Models into Sheet Metal Models
• Tab and Flange Features
• Unbending and Rebending Features
• Creating Corner and Bend Taper Configurations
• Creating Punch-type and Deformable Cutouts
• Resizing Features
• Advanced Flanges
• Creating Flat Patterns and Solids
• Drafting Tools
• Establishing Sheet Metal Standards

Prerequisites:
• NX CAD Fundamentals (TR10200) OR
NX for Experienced CAD Users (TR10300)

NX Mechanical Routing (TR10600)
2 Day Class

Learn the tools used to quickly define piping paths around and through other NX assemblies and to qualify and place standard parts. Students will have the ability to create full associative mechanical routed systems models with NX, effectively use piping libraries, automate, calculate cut lengths, and create bend reports.

Users will also learn to leverage the integration of NX with mechanical routing system design tools.

Topics:
• Routing Introduction
• Qualifying and place parts
• Creating and Editing Paths
• Applying Stock
• Validating Design

Prerequisites:
• NX CAD Fundamentals (TR10200) OR
NX for Experienced CAD Users (TR10300)

NX Electrical Routing (TR10700)
2 Day Class

Create fully associative electrical routed system models with NX and learn how to utilize tools used to quickly qualify and place standard parts, define wiring and harness paths around/through NX assemblies, and assign stock to paths.

Topics:
• Routing Introduction
• Creating Connection and Component Lists
• Qualifying and Placing Parts
• Applying Stock
• Creating Bill of Materials (BOM)
• Creating Formboards
• Validating Designs
• Documentation

Prerequisites:
• NX CAD Fundamentals (TR10200) OR
NX for Experienced CAD Users (TR10300)

NX CAD Mold Wizard Processing (TR10900)
5 Day Class

Learn to reduce mold design lead time using Mold Wizard automation. A predominant amount of NX Mold Wizard functionality is taught from the beginning stages of part and flow analysis to drafting essentials, including all of the major systems within an operating mold such as ejection, cooling, slides and lifter, and simulation.

Topics:
• Routing Introduction
• Creating Connection and Component Lists
• Qualifying and Placing Parts
• Applying Stock
• Creating Bill of Materials (BOM)
• Creating Formboards
• Validating Designs
• Documentation

Prerequisites:
• NX CAD Fundamentals (TR10200) OR
NX for Experienced CAD Users (TR10300)

NX Mill Manufacturing Fundamentals (TR20300)
4 Day Class

NC programmers new to NX CAM will accelerate in understanding how to create tool paths for 2 and 3 axis milling/ drilling centers in NX, cutting and non-cutting motions, and the creation and post processing of NX operations. Upon completion, user will have the capability to create/modify output verified 3 axis NC programs for milling machines.

Topics:
- Manufacturing User Interface
- Machine Coordinate Systems
- Model Concepts for Manufacturing Tools
- Face Milling Visualization of Tool Paths
- Planar Milling Operations
- Z-Level Milling
- IPW and Rest
- Libraries
- Post Processing and Shop Documentation

Prerequisites:
- NX CAD Fundamentals (TR10200) OR NX for Experienced CAD Users (TR10300)
- Knowledge of manual NC/CNC programming methods and machinery
- Thorough understanding of NC/CNC programming principles

NX Manufacturing Customization (TR20300)
3 Day Class

Become proficient with CAM customization options and automation to significantly decrease time spent creating tool paths. Learn how to add new cutting tools, cutting tool materials, part libraries, acquire new methods to creating new template field files, configure NX output for shop documentation, and automating FBM.

Topics:
- Machining Methods
- Cutting Tool Libraries
- Machining Data
- Feature Based Machining (FBM)
- Shop Documentation Custom Output
- Integrated Simulatoin and Verification
- Manufacturing Wizards

Prerequisites:
- NX Mill Manufacturing Fundamentals (TR20300)

NX Manufacturing Update (TR20550)
2 Day Class

This course provides targeted CAM training for users who are updating their NX CAM software to a newer version. Knowledge of previous NX CAM version is required.

Upon completion, accomplished NC programmers will have the knowledge and skills to use the newest technologies in NX CAM. The pace and topics of this course have been carefully planned specifically for the experienced NC programmer.

Topics:
- Manufacturing - General (Dependent on NX latest release)
- Milling
- Turning
- Thread Milling
- Feature Editing
- Feature Based Machining
- Integrated Simulation and Verification
- Synchronous Technology

Prerequisites:
None

NX Multi Axis Machining (TR20350)
2 Day Class

If you're responsible for developing complex 4 and 5 axis programs, this class is for you. Upon completion, accomplished NC programmers will have the capability to create and modify 4 and 5 axis operations for complex machines. Knowledge of NX CAM 3-axis operations is required.

Topics:
- 5 axis Z-Level
- Variable Axis Contour Milling
- Profiling Walls with a Variable Tool Axis
- Advanced Non-Cutting Moves
- Wave Geometry Linker in Manufacturing
- Refixturing and the In-Process Workpiece
- Optimize to Drive Methods

Prerequisites:
- NX Mill Manufacturing Fundamentals (TR20300)

NX Turning Manufacturing Applications (TR20550)
3 Day Class

Gain essential turning training for lathes and mill-turn machine tools. Knowledge of programming lathes and/or mill turns not is not required. After completion, users will have the ability to create and modify turning and mill turn programs.

Topics:
- Intro to Turning
- Defining Part and Blank Geometry
- Creating Perishable Tooling Requirements
- Facing Operations
- Roughness Operations OD and ID
- Finish Turning OD and ID
- Centerline Drilling Operations
- Threading Operations
- Grooving Operations
- Verification of Operations
- Multiple Spindle Machines
- Posting and Shop Documentation

Prerequisites:
- NX Mill Manufacturing Fundamentals (TR20300)

NX Post Building Techniques (TR20450)
3 Day Class

Get essential post building training for developing NC post processors. Knowledge of NC programming and machine tool techniques is required. Learn to create and modify NC post processors for 2.5 thru 5 axis machines as well as turning and mill turn post processors.

Topics:
- Post Builder Interface and File Structure
- Post Builder Commands
- Building 3 and 4 Axis Post Processors
- Building 2-Axis Late Post Processors
- Building Mill Turn Machining Center Post Processors
- Modifying Output of Machine Commands and Sequencing
- Custom Comments
- Variables, Procedures, Arithmetic Operators, Looping, User Defined Events and Cycles

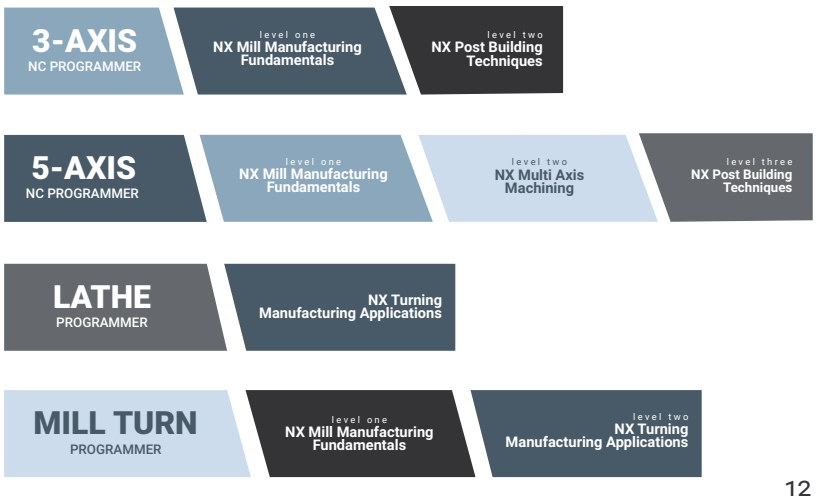
Prerequisites:
- NX Mill Manufacturing Fundamentals (TR20300)

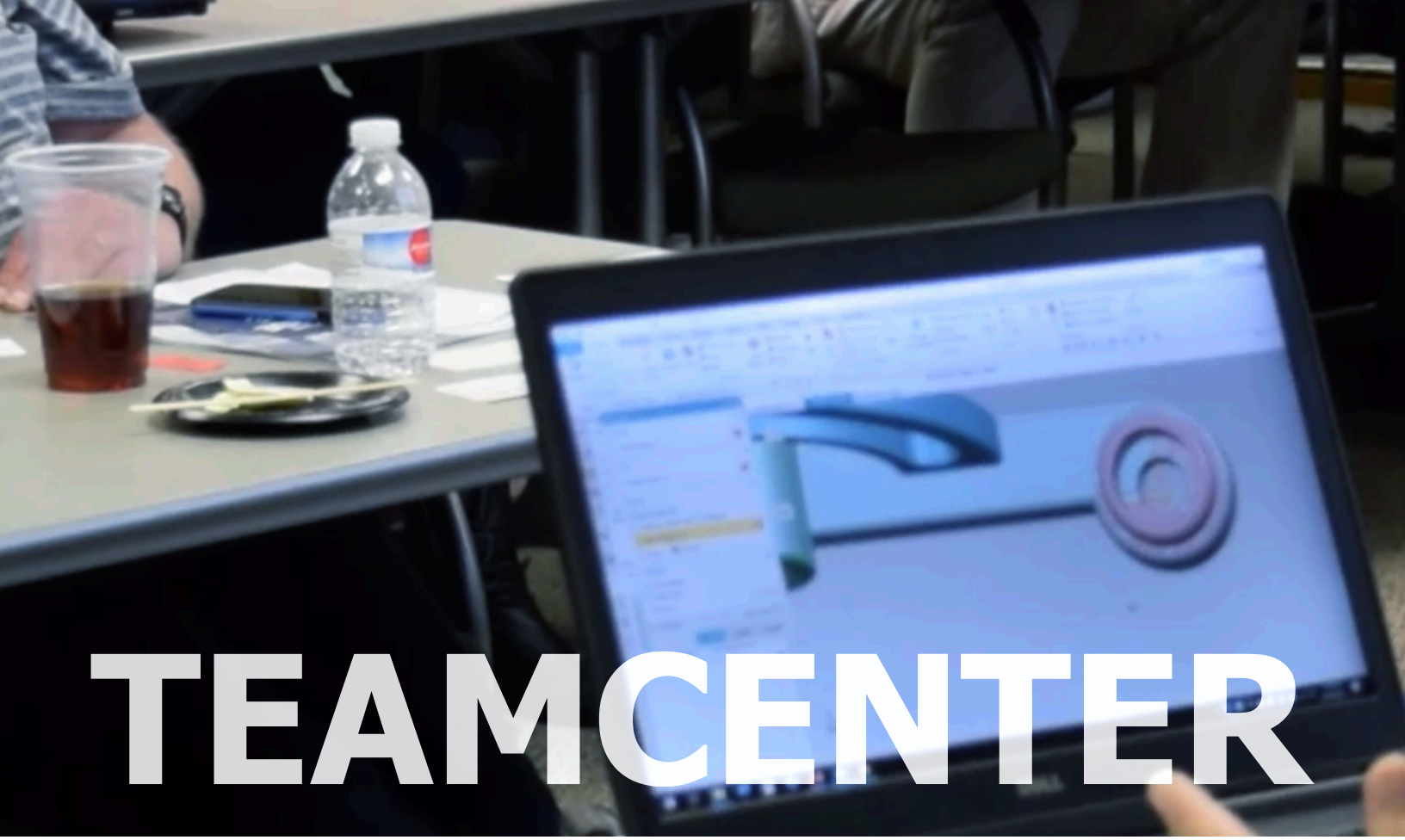
WHERE DO I START?

Make it an easy journey with our bar chart.

Map out your learning trail to become a proficient NX CAM user.

WHAT KIND OF PROGRAMMER ARE YOU?





TEAMCENTER

Teamcenter User Training (TC40300)
3 Day Class

This course is intended to provide fundamental skills for working in the rich client interface and the basics of using a suite of Teamcenter software applications. These software applications include My Teamcenter, Structure Manager, Teamcenter for lifecycle visualization embedded viewer, and Workflow Viewer.

Topics:
- Review Teamcenter Terms and Concepts
- Overview of Rich Client and Thin Client Interface
- Performing Searches, View 2D and 3D Data, and Perform Markups
- View, build, and edit product structure
- Perform Workflow Tasks and Track Process
- Create and Edit Teamcenter Objects
- Create Project Teams
- Create and Edit Data Using Microsoft Office Integration
- Create New Teamcenter Items
- Using CAD Tools with Teamcenter

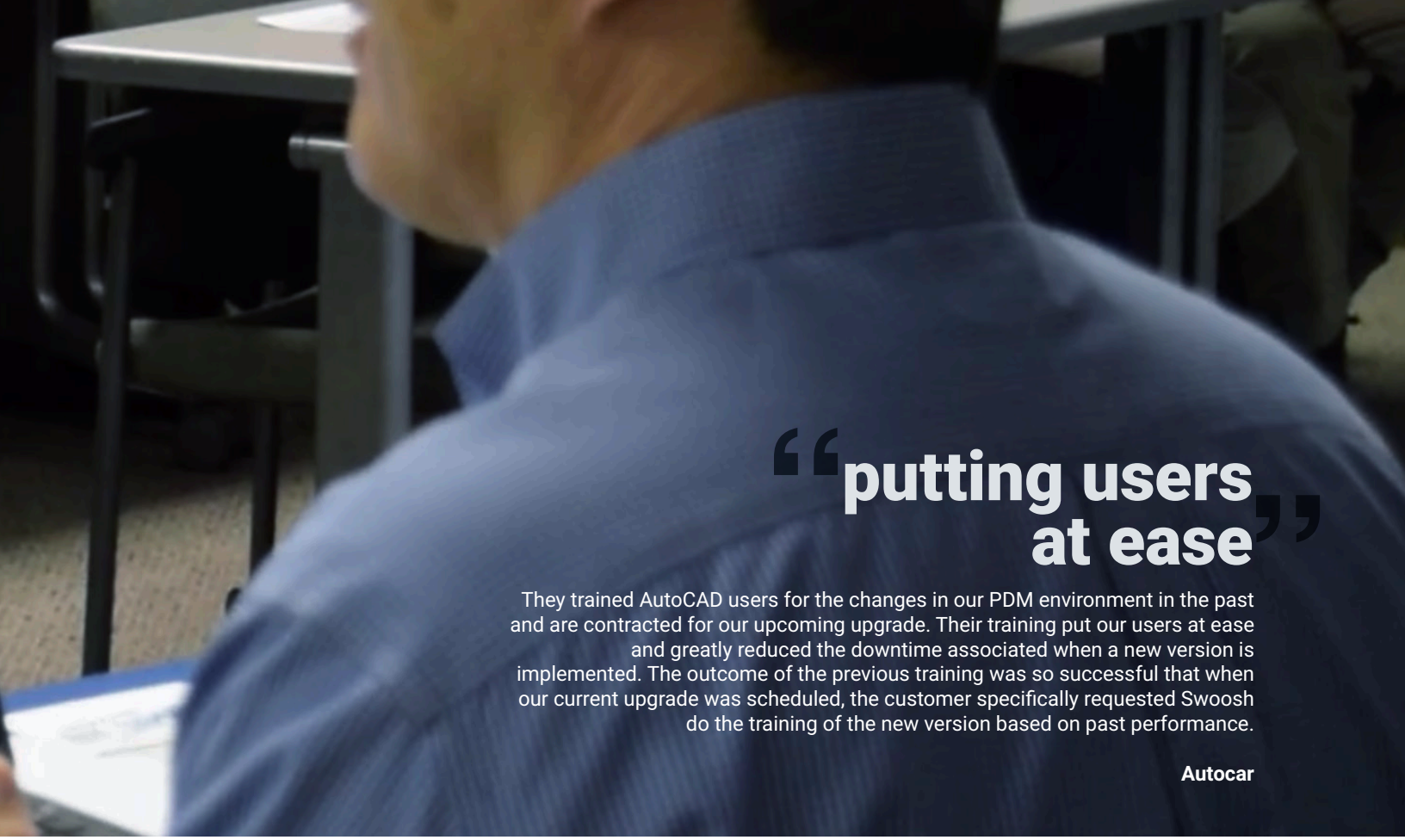
Prerequisites:
None

Teamcenter Application and Data Model Administration (TC40350)
4 Day Class

Obtain the fundamental skills for configuring and maintaining a standard organizational Teamcenter environment. The application administration and system administration areas are both addressed in order to provide data security.

Topics:
- User Organization of Groups and Roles
- CAD Administration
- Access Manager
- Workflow Design
- Introduction to Business Modeler IDE Process
- Business Rules
- Options, Constraints, and Rules
- Teamcenter System Maintenance
- Applying Software Updates
- Data Security

Prerequisites:
- Teamcenter User Training (TC40300)



“putting users at ease”

They trained AutoCAD users for the changes in our PDM environment in the past and are contracted for our upcoming upgrade. Their training put our users at ease and greatly reduced the downtime associated when a new version is implemented. The outcome of the previous training was so successful that when our current upgrade was scheduled, the customer specifically requested Swoosh do the training of the new version based on past performance.

Autocar

Teamcenter Installation (TC40400)
5 Day Class

This course defines the two-tier and the four-tier architectures and demonstrates how to install the components of these architectures. This includes database server, corporate server, two-tier rich client, the Business Modeler IDE, web application server, web tier, server manager, thin client, four-tier rich client, the embedded viewer, and NX Manager.

Topics:
- Overview of Two-Tier and Four-Tier Architectures
- Teamcenter Database Creation (Oracle, MSSQL, Server, DB2)
- Common Licensing Server
- Corporate Server Installation
- File Management System (FMS) Overview
- Two-Tier Rich Client Installation
- Teamcenter J2EE Web Tier and Server Manager
- Teamcenter .NET Web Tier and Server Manager
- Installation of the Four-Tier Rich Client, Using Over-the-Web Install and TEM
- Installation of the Business Modeler IDE
- Administering the In-Production System
- FCS Performance Cache Server
- Teamcenter Integrations for Microsoft Office
- Embedded Visualization for the Two-Tier and Four-Tier Rich Clients
- NX Manager for the Two-Tier and Four-Tier Rich Clients
- Installing and Accessing Teamcenter Online Help

Prerequisites:
None

Teamcenter Workflow Design (TC40500)
2 Day Class

Gain skills necessary for creating, testing, and deploying Workflow templates for Process Management in Teamcenter. This course give a further in-depth look on how things interact. Users must have a good working knowledge of their system and have passed the prerequisites.

Topics:
- Workflow Concepts - Dev/Test/Product Environments, Terms and Definitions, Process Templates, Lifecycle Status
- Using Action and Rule Handlers
- Process and Task ACLs
- Exporting and Importing Workflow Templates
- Controlling Access to Workflows Using Filters
- Executing Workflows - Task Actions, Terminating Workflows, Auditing
- Integrating Workflow with Schedule Manager

Prerequisites:
- Teamcenter Application and Data Model Administration (TC40350)
- Basic Administration Skills

Solid Edge Fundamentals with Sheet Metal (SE30250SM)
4 Day Class

Designed for the novice and intermediate user, this class helps users become more proficient at production-level solid modeling. Learn to leverage Solid Edge for production-level parametric models of parts and assemblies. Key takeaways include creating detail drawings and document management.

Topics:
- Solid Edge User Interface
- 2D Sketches and Profiles
- Synchronous and Ordered Design in Sheet Metal
- Building and Editing Assemblies
- Creating and Editing Detail Drawings of 3D Parts and Assemblies
- Document Management (Design Manager)

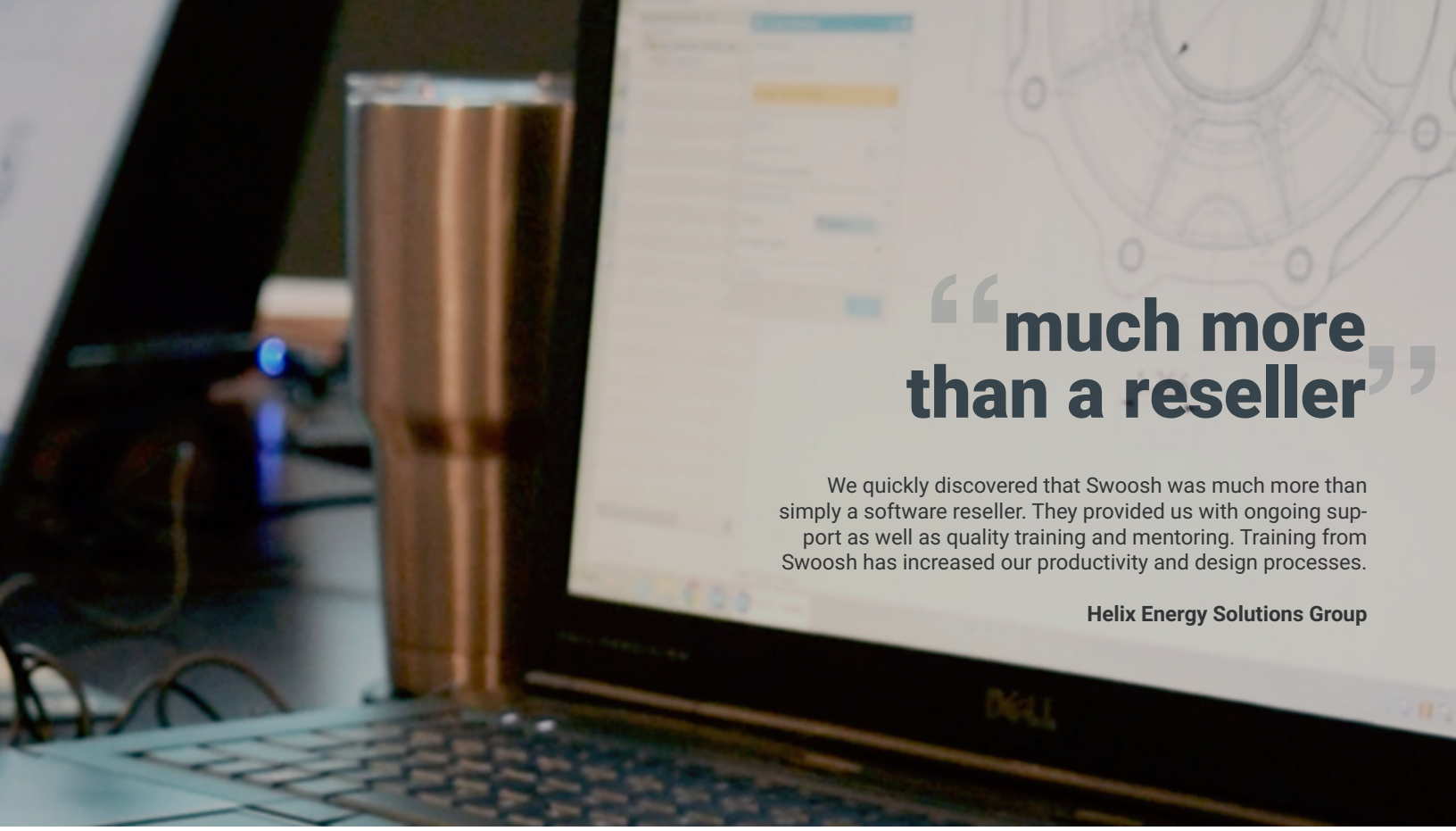
Prerequisites:
None

Solid Edge Fundamentals with Part Environment (SE30250P)
4 Day Class

With an emphasis in part environment, this class helps beginner and intermediate users become more proficient at production-level solid modeling. Learn to leverage Solid Edge for production-level parametric models of parts and assemblies. Key takeaways include creating detail drawings and document management.

Topics:
- Solid Edge User Interface
- 2D Sketches and Profiles
- Synchronous and Ordered Design in Part Environment
- Building and Editing Assemblies
- Creating and Editing Detail Drawings of 3D Parts and Assemblies
- Document Management (Design Manager)

Prerequisites:
None



“much more than a reseller”

We quickly discovered that Swoosh was much more than simply a software reseller. They provided us with ongoing support as well as quality training and mentoring. Training from Swoosh has increased our productivity and design processes.

Helix Energy Solutions Group

Solid Edge Advanced Assemblies (SE30300)
2 Day Class

Solid Edge Systems Design places additional emphasis on the function of a product and how components interact - giving designers the power to advance beyond fit and to create intelligent, functionally realistic models.

Topics:
- Improving Overall Assembly Skills
- Advanced Topics of Building Part Relationships
- Designing Parts in the Context of an Assembly (Top Design Design)
- Using the vaiable table
- Systems Design Interference Checking
- XpresRoute Tubing and Wiring
- Exploding Assemblies
- Cutaway Views
- Analyzing Mechanisms
- Design Sensors
- Weldments
- Family of Assemblies / Configurations
- Rendering and Animation
- Revision Manager

Prerequisites:
- Solid Edge Fundamentals (SE30250)

Solid Edge Update Training (SE30350)
2 Day Class

Looking to transition to the latest software version? This course will touch on new design environments and best-practice tecniques that will help users easily adapt to the latest release. Detailed course content varies and is dependent on the Solid Edge software version in which the student transitioning to.

Topics:
- Synchronous Technology Concepts
- 2D and 3D Sketching
- Simultaneous Editing of Multiple Parts
- Solid Edge Requirements Management
- Solid Edge Portal

Prerequisites:
None

SIM
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Simcenter Pre/Post Fundamentals (TR15220)
3 Day Class

Are you a design engineer or analyst looking to gain knowledge performing finite element analysis (FEA)? Take this course to learn the FEA processes - including model preparation, mesh generation and manipulation, material definition, boundary conditions, FEA model checking and solving, and post processing results.

Topics:
- Build /Analyze Finite Element Model with Pre/Post
- Generate Mesh on the Model
- Apply Bounday Conditions
- Materials and Physical Properties for Models
- Fields and Expressions
- Post Process Modeling and Report Generating

Prerequisites:
- NX CAD Fundamentals (TR10200) OR
  NX for Experienced CAD Users (TR10300)
- Basic understanding of FEA principles
- Working knowledge of NX Modeling

Simcenter Thermal Simulation (TR15223)
2 Day Class

Using Simcenter to model heat transfer? This course introduces product simulation and analysis in Simcenter Pre/Post for heat transfer applications. Users will learn to effectively carry out thermal analysis while covering basic thermal topics, including conduction, convection, and radiation.

Topics:
- Overview of Simcenter Thermal
- Meshing and Material Properties
- Heat Transfer Introduction
- Thermal Initial Conditions and Boundary Conditions
- Post Processing, Specific to Simcenter Thermal
- Thermal Mapping

Prerequisites:
- Simcenter Pre/Post Fundametnals (TR15220)
- Basic understanding of FEA principles
- Working knowledge of NX Modeling

Simcenter Flow Simulation (TR15224)
2 Day Class

Gain knowledge in carrying out computational fluid dynamics (CFD) efficiently. This course introduces product simulation and analysis in Simcenter Pre/Post 3D fluid flow application.

Topics:
- Overview of Simcenter Flow
- Fluid Volume Creation and Meshing
- Meshing and Material Properties
- Flow Solution Options and Solving
- Post Processing Specific to Simcenter Flow

Prerequisites:
- Simcenter Pre/Post Fundametnals (TR15220)
- Basic understanding of FEA principles
- Working knowledge of NX Modeling

Simcenter Thermal and Flow Analysis (TR152225)
3 Day Class

Modeling heat transfer and fluid flow? Gain skills to effectively carry out advanced thermal and computational fluid dynamics (CFD) analysis. This course covers the use of Simcenter Thermal and Flow to model heat transfer and 3D fluid flow problems.

Topics:
- Meshing and Thermal Analysis
- Meshing for Flow Analysis
- Thermal Boundary Conditions
- Thermal Couplings
- Radiation to Environment
- Flow Boundary Conditions
- Convection Modeling
- Solution Attributes and Solving
- Coupled Thermal-Flow Analysis
- Post Processing
- Mapping

Prerequisites:
- NX CAD Fundamentals (TR10200) OR NX for Experienced CAD Users (TR10300)
- Basic understanding of FEA principles
- Working knowledge of NX Modeling

Simcenter Advanced Thermal and Flow Analysis (TR152226)
2 Day Class

Obtain theoretical and practical aspects of how to handle heat transfer by conduction, convection, and radiation. Along with solving mold heat transfer, radiation, and 3D fluid flow problems, users will learn how to incorporate advanced radiation modeling - from solar and radiative heating, full coupled with thermal, and fluid flow analysis.

Topics:
- Solar Heating
- Radiative Heating
- Advanced Thermo-Optical Properties
- Duct Networks
- Supersonic Flow Boundary Condition
- Rotating Frames of Reference
- Rotational and Translational Periodicity
- Advanced Thermal Coupling Types
- Articulating Models
- Active Fan Controller
- Non-Newtonian Fluids
- Humidity and Scalar Fluid Mixtures
- Peltier Cooler (TECs)
- Joule Heating
- Ablation and Charring
- Material Libraries
- Phase Change
- Particle Tracking

Prerequisites:
- Thermal and Flow Analysis (TR15225)
- Basic understanding of FEA principles
- Working knowledge of NX Modeling

FEMAP

Femap 101 (FEMAP101)
3 Day Class

This beginner-level course covers Femap and its structure, capabilities, and how to efficiently use the finite element analysis (FEA) tool. Get one step closer to becoming a Femap expert as you fill in the grey areas, provide important time-saving knowledge, and perform FEA on single parts and/or multi-part assemblies.

Topics:
- Overview of Femap Functions and Workflows
- User Interface and Online Help
- Import, Create, and Edit Geometry for Meshing
- Materials and Properties
- Meshing Creation and Editing
- Loads and Constraints
- Model Display and Organization
- Visualizing and Documenting Results
- Assembly Modeling
- Specialized In-Depth Training

Prerequisites:
- Basic understanding of finite element analysis and structural engineering

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