

Simcenter 3D Essentials

Category: Siemens Simcenter Course

Course Type: Scheduled

Duration: 3 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Beginner to Intermediate

Who's it for?

Simcenter 3D essentials introduces the finite element modelling and analysis tool. It is intended for design engineers and analysts who want to learn the details of how to do finite element analysis on NX models. This course covers the details of the FEA processes from preparing a model, meshing, applying boundary conditions, solving, and post-processing the results.

Course Content:

From getting to know Simcenter to geometry idealisation, after this 3 day course, you will learn the details of how to do finite element analysis on NX models.

- Finite Analysis process
- Getting to know Simcenter
- Geometry preparation
- Element types
- Meshing & boundary conditions
- Solving
- Post processing
- Solutions
- Mesh collectors and materials
- Geometry idealization
- Model Checking

Note: You will require some familiarity of 3D CAD

Simcenter 3D Advanced

Finite Element Modelling, Advanced Tools and Analysis Techniques.

Category: Siemens Simcenter Course

Course Type: Scheduled

Duration: 2 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Beginner to Intermediate

Who's it for?

Simcenter 3D Advanced Simulation introduces the finite element modelling and analysis tool extends the essentials course and covers more advanced solutions and analysis techniques.

Course Content:

From model analysis to assembly FEM, after this 2 day course, you will learn the details of how to do finite element modelling and analysis tools.

- Modal Analysis
- Response Simulation
- Thermal Analysis
- Buckling Analysis
- Contact & Gluing
- Bolts and preload
- Symmetry
- Assembly FEM
- Geometry optimization
- Basic nonlinear Static Analysis
- Customer examples

Note: This course is for beginners and those with little/some 3D CAD experience.

Simcenter 3D Pre-Post

Category: Siemens Simcenter Course

Course Type: Scheduled

Duration: 4 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Beginner - Intermediate

This course introduces the Simcenter 3D Pre/Post (Engineering Desktop) product, which provides finite element modeling and results visualization. It covers the details of the finite element analysis (FEA) processes including preparing geometry, meshing, applying boundary conditions, checking the model, solving, and post-processing the results.

Course Content:

Simcenter 3D Fundamentals:

- Analysing models
- Managing analysis data
- Pre/Post features

Simcenter-3D - Preparing Models:

- Prepare geometry and mesh models
- Modelling Connections
- Assemblies
- Boundary Conditions and Variable Conditions
- Checking and resolving issues

Solving the models:

- Running structural analysis and workflows
- Nonlinear analysis workflows

Reviewing Analysis Results:

- Display results in Post
- Manipulating data
- Graphics results
- Saving and restoring

Who is it for?

This library is designed for CAE analysts or specialists. Basic understanding of finite element analysis. Working knowledge of the NX Modeling application.

Design Space Exploration

Category: Siemens Simcenter Course

Course Type: Scheduled

Duration: 2 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Intermediate to Advanced

The objective of this course is to provide analysis engineers with the ability to perform design space analyses in Simcenter STAR-CCM+ with design sweeps and optimization via Pareto front. Fundamentals of design space exploration are presented through lectures and workshops.

Course Content:

- Introduction to Design Manager
- Use Design Manager to solve the drama at a heat exchanger company
- Optimization fundamentals
- Types of design outcomes
- Discontinuous parameter space transformation
- Preparing simulations for design exploration
- Refining the mesh and improving results
- Parameter sweep
- Robust sketching of a wavy channel
- Robust solid modeling of a wavy channel
- Parameterizing a three layer composite
- Robust CAD of a finned heat exchanger
- 2D heat exchanger core reference simulation
- Wavy heat exchanger design exploration:
 - setup and run,
 - in depth data analysis,:
 - further improving designs:

Who is it for?

If you are an experienced Simcenter STAR-CCM+ user and wish to learn how to perform design space analyses in Simcenter STAR-CCM+ with design sweeps and optimisation via Pareto front. Fundamentals of design space exploration are presented through lectures and workshops. Users should have a good grasp of programming fundamentals.

Simcenter FLOMASTER Foundations

Category: Siemens Simcenter Flomaster Course

Course Type: Scheduled

Duration: 2 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Beginner to Intermediate

This course is designed to provide new users of Simcenter FLOMASTER with a background sufficient for tackling a wide range of flow analysis problems in 1D. The main goals of the course are to make the student familiar with the operation and functionality of Simcenter FLOMASTER and to instill good engineering modeling practices.

Course Content:

- What is System Simulation?
- Thermo-Fluid Systems
- What is Simcenter FLOMASTER?
- How Does Simcenter FLOMASTER Work?
- Simcenter FLOMASTER Capabilities
- Simcenter FLOMASTER Launchpad
- Simcenter FLOMASTER Launchpad Overview
- Simcenter FLOMASTER Launchpad: License Module Configuration
- Simcenter FLOMASTER Launchpad: Database Module Configuration
- Simcenter FLOMASTER Launchpad: Logon Module Configuration
- Simcenter FLOMASTER Launchpad: Tool and System Sections
- Simcenter FLOMASTER Project View
- Creating Projects and Networks in Simcenter FLOMASTER
- Catalogues in Simcenter FLOMASTER
- Components in Simcenter FLOMASTER
- Roles and Share in Simcenter FLOMASTER
- Building a Simple Network in Simcenter FLOMASTER
- Dragging and Dropping Components in Simcenter FLOMASTER
- Adding Pipes in Simcenter FLOMASTER
- Components Connection in Simcenter FLOMASTER
- Toolbar Functionality in Simcenter FLOMASTER
- Filter Option in The Project View Pane
- Data Collection in Simcenter FLOMASTER
- Data Input in Simcenter FLOMASTER
- Data Requirements in Simcenter FLOMASTER
- Performance Data in Simcenter FLOMASTER
Simcenter FLOMASTER Performance Data: Creating a New Curve
- Simcenter FLOMASTER Performance Data: Creating a New Surface
- Setting Performance Data in Components
- Materials in Simcenter FLOMASTER
- Creating New Materials Based on a Template in Simcenter FLOMASTER
- Creating a Fluid Using NIST REFPROP
- Creating a New Fluid Based on CAPE-OPEN Properties

- Running Simulations and Viewing Results in Simcenter FLOMASTER
- Simulation Types and Options in Simcenter FLOMASTER
- Result Sets and Audit Tab in Simcenter FLOMASTER
- Errors and Warnings in Simcenter FLOMASTER
- Accessing Single Component Results: Steady State Simulations
- Accessing Single Component Results: Transient Simulations
- Results Plot Window Features
- Post-Processing in Simcenter FLOMASTER
- Post-Processing Results: Network Result Display
- Post-Processing Results: Network Result Validation
- Post-Processing Results: Sensors and Network Labels
- Post-Processing Results: Dashboard
- Post-Processing Component Results and Input Audit Reports
- Audit Trail in Simcenter FLOMASTER
- Audit Trail Overview
- Audit Trail Enablement
- Sharing Operations in Simcenter FLOMASTER
- Packing and Unpacking in Simcenter FLOMASTER
- Importing and Exporting Functional Mock-up Units
- Xcelerator Share Feature
- Additional GUI Features in Simcenter FLOMASTER
- Schematic Configuration in Simcenter FLOMASTER
- Layers in Simcenter FLOMASTER
- Creating Unit Sets in Simcenter FLOMASTER
- Replacing Components in The Network
- Advanced Components in Simcenter FLOMASTER
- Sub-Systems and Sub-Circuits in Simcenter FLOMASTER
- Copying Components to Catalogues in Simcenter FLOMASTER
- Composite Components in Simcenter FLOMASTER
- N-Arm Components in Simcenter FLOMASTER

Who is it for?

The primary audience for this course are users who design and build networks for flow analysis problems in 1D and simulate models using Simcenter FLOMASTER.

Design and Simulate Thermal Fluid Systems

Category: Siemens Simcenter Flomaster Course

Course Type: Scheduled

Duration: 1.5 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Intermediate

We will provide a good understanding of the thermal aspects and exchanges that can be added to any fluid system in interaction with the environment and/or any material participating to the different heat transfers.

Course Content:

- The Simcenter Amesim Thermal, Thermal Hydraulic, Thermal Hydraulic, Thermal Hydraulic Component Design and/or Pneumatic and Pneumatic Component Design libraries
- Multi-fluid, multi-solid and gas mixture capabilities
- Building systems with detailed thermal exchanges
- Half heat exchangers
- Review of elementary physical phenomena represented in Simcenter Amesim
- Thermal properties of solids and fluids (liquids and gas)
- Heat transfers by conduction, convection, radiation
- Dimensionless numbers associated to heat transfers
- Transient thermal phenomena
- Detailed description of thermal components
- Enthalpy flow rates / isenthalpic assumption in restrictions
- Illustration with basic practical examples

Who is it for?

Technical Specialists or Engineers who need to take into account thermal phenomena in the simulation and the analysis of their hydraulic or pneumatic systems and components.

Simcenter 3D Motion Essentials

Category: Siemens Simcenter 3D Course

Course Type: Scheduled

Duration: 3 Days

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Beginner to Intermediate

Simcenter 3D Motion is a CAE software application you can use to animate and analyze both kinematic and dynamic motion mechanisms in terms of critical design positions, forces, velocities, and accelerations. Upon successful completion of this course, students will understand how to apply and edit motion simulations, and use motion simulations to analyze, troubleshoot, and optimize a mechanism design.

Course Content:

- Using the basic capabilities of Simcenter 3D Motion
- Performing kinematic, dynamic analysis of Motion models
- Preparing models that can be used in Motion
- Creating motion bodies, joints, specialized constraints, and motion drivers
- Defining a mechanism with springs, dampers, bushings
- Using various data tools to work with Motion models
- Adding loads to a Motion model
- Defining analytical contact and 3D contact for a Motion model
- Defining Motion solution options
- Displaying Motion results
- Using submechanisms to define a mechanism

Who is it for?

Analysts, engineers, and designers who want to animate and analyze an assembly of moving parts.

Introduction to Heeds

Category: Siemens Simcenter HeedsCourse

Course Type: Scheduled

Duration: 1 day

Location: Kaizen PLM Office, Client Site, Remote (Online)

User Level: Beginner

HEEDS Introductory training serves as an introduction to the major concepts behind effective process automation and design-space exploration using HEEDS. It provides a basic introduction to using HEEDS for design exploration studies. You will learn how to set up, run, and view the results from a general HEEDS study!

Course Content:

- Optimization Strategies and Observations
- Contrasting the Manual Design Process with Automated Search
- The Automated Design Space Exploration Process
- Batch Execution of an Analysis Model
- Process Automation
- Defining an Optimization Problem
- Searching for Optimal Solutions
- Monitoring and Post-Processing a Design Study
- Automated Optimization
- File and Directory Structure during a HEEDS Study
- Study Review, Messaging, and Troubleshooting in HEEDS
- Tagging and Portals for Connecting to your Models with HEEDS
- Design Variables
- Optimization Search Path
- Number of Evaluations and Restart
- Multi-Objective Optimization
- Mutli-Analysis Workflow Automation

Who is it for?

The HEEDS Introduction course is intended for all new and returning HEEDS users who wish to gain a basic understanding of the software functionality and user interface.

Other Simulation Courses

Kaizen PLM also offer courses on:

- Simcenter Advanced Flow
- Simcenter 3D Composites
- Simcenter 3D Motion
- Simcenter Advanced Thermal

- Simcenter Non-Linear (Sol106)
- Simcenter 3D Thermal & Flow
- Simcenter Multi-Step Non-Linear
- Simcenter 3D Response Dynamics
- Simcenter Nastran Dynamics
- Turbulence and Turbulence Modelling (Star CCM+)
- Fluid Structure Interaction (Star CCM+)
- Effective Heat Transfer (Star CCM+)
- Simcenter Flomaster Incompressible Transient Modelling
- Simcenter Flomaster Incompressible Steady State Modelling
- Simcenter Amesim - Air Conditioning Systems
- Simcenter Amesim - Design and Simulate Aircraft Fuel Systems
- Simcenter Amesim - Design and Simulate Electric Storage Systems
- Simcenter Amesim – Fuel Cell Design
- Electrical Vehicle Modeling
- Model Data Access in HEEDS
- Advanced Variables and Responses in HEEDS
- Post Processing and Data Mining in HEEDS
- Introduction to Simcenter Battery Design Studio

Simcenter Bespoke:

Covers your models and designs, ensuring you can use simulation tools confidently, tailored to customer's specific requirements. Please get in touch with us to discuss your training requirements and we can discuss the best options for you.