Siemens Xcelerator Academy: On-Demand Training

Thursday, March 17, 2022   5:01 PM

Designed for engineers who want to build and analyze system models. They will learn how to use Simcenter Amesim and Flomaster to quickly build system models using ready-to-use multi-physics libraries, analyze results and optimize system performance. In addition, you will learn how to use HEEDS for design space exploration and analyze multiple design in a short period of time.

- 12 month subscription
- Access to cloud-based environment for hands-on lab exercises
- Access to new training content added during the subscription period
- Knowledge assessments to measure learning progress

Learning Paths in "System Modeling using Simcenter"

Learning Paths provide guided chapters on a subject. Tracks are curated collections of Learning Paths that focus on a specific skill.
Select a Track to focus on developing the skills you need most.

On-Demand Training - System Modeling using Simcenter

Getting Started with Simcenter Amesim 9 Chapters

Introduction to the Simcenter Amesim, use of the software as well as the modeling and simulation process

1 Learning Experience Overview 2 Topics

1. Welcome: Navigation Overview
2. Getting started with Simcenter Amesim Intro

2 Introduction to Simcenter Amesim 8 Topics

1. Simcenter Amesim Overview
2. Multi-domain and multi-level capability
3. Component Libraries
4. Help demos and library search
5. Starting and opening models
6. GUI overview
7. Lab: Introduction to Simcenter Amesim
8. Knowledge Check: Simcenter Amesim overview

3 Simcenter Amesim workflow and helpful features 8 Topics

1. Workflow modes
2. Sketch mode
3. Submodel mode
4. Parameter mode
5. Plotting variables
6. Purge
7. Lab: Build a simple Simcenter Amesim model
8. Knowledge Check: Simcenter Amesim workflow

4 Data import and useful table features 6 Topics

1. Working with tables
2. Interpolation, extrapolation and other Table Editor tools
3. Using data import tool
4. Creating data files in a model
5. Lab: Table features
6. Knowledge check: Data import and Useful Table Features

5 Application Example 9 Topics

1. Build an application model
2. Simulate, analyze and report results
3. Performance Analyzer
4. Linear Analysis
5. Post-processing window
6. Plots and Animation
7. Lab: Build a simple model
8. Lab Answer: Solution to principle lab
9. Knowledge check: Application example

6 Supercomponents 5 Topics

1. Create supercomponents
2. Save and encrypt supercomponents
3. Customize supercomponents
4. Lab: Supercomponents overview
5. Knowledge Check: Supercomponents

7 Interfaces overview 5 Topics

1. Functional mock-up interface
2. Scripting interfaces
3. Software Interface
4. Lab: FMI Interface
5. Knowledge Check: Interfaces overview

8 Additional Features 8 Topics

1. Customize preferences menu
2. Units and unit management
3. CAD Import
4. Lab: Starter files
5. Lab: CAD Import
6. Knowledge Check: Additional Features
7. Lab: Customize settings and optimize design
8. Lab Answer: Solution to principle lab

9 Assessment: Getting Started with Simcenter Amesim 1 Topic

1. Assessment: Getting Started with Simcenter Amesim

Introduction to Hydraulic System Simulation 6 Chapters

Learn important basic hydraulic concepts, get a global view on hydraulic libraries and components, and learn how to build hydraulic models in Simcenter Amesim.

1 Hydraulic Libraries Overview 3 Topics

1. Libraries and components for hydraulic modeling
2. Applications of Hydraulic libraries
3. Knowledge Check: Hydraulic Libraries Overview

2 Hydraulic Fluid properties 5 Topics

1. Introduction to fluid properties
2. Fluid Properties Parameters
3. Lab: Pressure Calculation
4. Lab Solution: Pressure Calculation
5. Knowledge Check: Hydraulic Fluids Properties

3 Hydraulic Lines and Components 4 Topics

1. Hydraulic chamber and orifice
2. Hydraulic Causality and pipes
3. Lab: Flow rate calculation in an orifice
4. Knowledge Check: Hydraulic lines and components

4 Hydraulic System Modeling 6 Topics

1. Equivalent orifice calculation

2. Hydraulic suspension
3. Hydraulic Transmission
4. Hydraulic Actuator
5. Lab: Hydraulic Accumulator
6. Knowledge Check: Hydraulic System Modeling

5 Additional features 6 Topics

1. CAD Import
2. Valve builder
3. Model Converter
4. Knowledge Check: Additional features
5. Lab: Design Spool Valve
6. Lab Solution: Design Spool Valve

6 Assessment: Introduction to Hydraulic System Simulation 1 Topic

1. Assessment: Introduction to Hydraulic System Simulation

FloMASTER Introduction 4 Chapters

This LP provides everything you need to get started using FloMASTER, including network creation, solving steady state & transient simulations & Post Processing.

1 Introduction to FloMASTER 8 Topics

1. What is System Simulation?
2. Thermo Fluid systems
3. Knowledge Check 1: Introduction to FloMASTER
4. What is FloMASTER?
5. How Does FloMASTER Work?
6. FloMASTER Capabilities
7. Knowledge Check 2: Introduction to FloMASTER
8. Assessment: Introduction to FloMASTER

2 FloMASTER GUI and Simple Examples 11 Topics

1. FloMASTER Launchpad
2. FloMASTER GUI
3. FloMASTER Components
4. Knowledge Check 1: FloMASTER GUI and Simple Examples
5. Simple Network Creation
6. Simple Post Processing
7. Lab: Creating and post processing a simple network
8. Mass Flow Rate Network Creation
9. Knowledge Check 2: FloMASTER GUI and Simple Examples
10. Lab: Mass Flow Rate Network Creation
11. Assessment: FloMASTER GUI and Simple Examples

3 Introduction to Steady State Simulations 11 Topics

1. Steady State Simulations
2. Steady State Netowrk Creation
3. Knowledge Check 1: Introduction to Steady State Simulations
4. Lab: Loss Data Input
5. Elevation & Pump Theory in FloMASTER
6. Lab: Elevation
7. Elevation Simple Example
8. Flow Balancing Theory in FloMASTER
9. Knowledge Check 2: Introduction to Steady State Simulations
10. Lab: Flow balancing network
11. Assessment: Introduction to Steady State Simulations

4 Introduction to Transient Simulations 10 Topics

1. FloMASTER Transient Simulations
2. FloMASTER Elastic Pipes
3. Knowledge Check 1: Introduction to Transient Simulations

4. Lab: Pressure Surge
5. Transient Filling of Tanks
6. Transient Filling of Tanks Control
7. Transient Pump Simulations
8. Knowledge Check 2: Introduction to Transient Simulations
9. Lab: Filling of Tanks
10. Assesment: Introduction to Transient Simulations

Introduction to HEEDS MDO 9 Chapters

Introduction to the HEEDS MDO, Design Space Exploration with a focus on Optimization, use of the software as well as the modeling and simulation approach.

1 HEEDS Overview 3 Topics

1. Application Example: Static Air Mixer
2. Simulation Tool Overview: Golf Shot Challenge
3. Simulation Tool Demo: SwingGui

2 The Automated Design Space Exploration Process 8 Topics

1. Lab - Manual Optimization
2. Manual Optimization Observations
3. Post-processing in HEEDS POST
4. Introduction to Design Space Exploration
5. Automating the Manual Design Process
6. Application Example: Rubber Bushing Mount
7. Summary Automated Design Space Exploration Process
8. Knowledge Check - Design Space exploration

3 Process Automation 5 Topics

1. Batch Execution
2. SwingGui Batch Execution
3. Summary Batch Execution and Extension Learning
4. Lab - Process Automation
5. Knowledge Check - Batch Execution

4 Efficient Search 8 Topics

1. Optimization Problem Statement in Standard Form
2. Main ingredients for optimization
3. Closed form Solutions vs Implicit Functions
4. Optimization Algorithms and Introduction to SHERPA
5. Global vs Local Search & Impact of Constraints
6. Application Example: Stiffened Panel
7. Summary Optimization Problem Statement and Efficient Search
8. Knowledge Check - Efficient Search

5 Insight & Discovery 11 Topics

1. Introduction to Insight & Discovery
2. Runtime monitoring
3. HEEDS POST
4. Lab - Automated Optimization Exercise
5. HEEDS Execution and Directory Structure
6. Data Storage and Control of Data
7. Study Review, Messaging, and Troubleshooting
8. Message Files
9. Summary on Insight & Discovery & Extension Learning
10. Lab - Study Review, Messaging, & Troubleshooting
11. Knowledge Check - Insight Discovery

6 Tagging, Analysis Portals, and Variables 8 Topics

1. Tagging Methods Overview
2. Analysis Portals
3. Continuous, Discrete, and Dependent Variables

4. Constant and Text Parameters
5. Defining Variables
6. Summary on Tagging, Variables & Extension Learning
7. Lab - Dependent & Discrete Variables Exercise
8. Knowledge Check - Tagging Variables

7 Hybrid-Adaptive Search 10 Topics

1. Objectives and their impact on Performance
2. Constraints
3. Active Constraints
4. Error Designs
5. Lab - Constrained Optimization Exercise
6. A more detailed look at SHERPA
7. Optimization Search Path Comparatives
8. How Many Evaluations & Restart
9. Summary on Hybrid-Adaptive Search
10. Knowledge Check - Hybrid Adaptive Search

8 Multi-Objective & Multi-Analysis Design Space Exploration 6 Topics

1. Weighted Sum vs Pareto Optimization
2. Pareto Optimization
3. Using Multiple Analyses
4. Summary on Multi-Objective and Multi-Analyses
5. Lab - Multi-Objective & Multi-Analysis
6. Knowledge Check - MultiObjective and Multi-Analysis

9 Assessment: Introduction to HEEDS MDO 1 Topic

1. Assessment: Introduction to HEEDS MDO