DASSAULT SYSTEMES | The 3DEXPERIENCE® Company

Course Catalog

Learning Experience for SIMULIA Fluids SMFLLX-OC

22 May 2023

3DEXPERIENCE®

Learning Experience | Course Catalog

© 2007-2023 Dassault Systèmes - All rights reserved

No part of this publication may be reproduced, translated, stored in retrieval system or transmitted, in any form or by any means, including electronic, mechanical, photocopying, recording or otherwise, without the express prior written permission of DASSAULT SYSTEMES. This courseware may only be used with explicit DASSAULT SYSTEMES agreement.

Learning Experience | Course Catalog

Learning Experience for SIMULIA Fluids - SMFLLX-OC	1
Complete Guide to PowerDELTA	2
Introduction to Isight	3
Introduction to PowerDELTA	4
Introduction to PowerFLOW	5
Introduction to Tosca Fluid	6
Introduction to XFlow	7
Isight Component Development	8
Optimizing Engineering Methods with Isight	10
Uncertainty Quantification with Isight	11
XFlow Advanced	12
XFlow Complete	13
XFlow Intermediate	14

Learning Experience for SIMULIA Fluids - SMFLLX-OC

Complete Guide to PowerDELTA	
Course Code	SIM-en-PDCOMP-F-V30R2022
Available Releases	SIMULIA 2021 , SIMULIA 2022
Duration	29.67 hours
Course Material	
Level	Fundamental
Audience	New PowerDELTA users and CFD Analysts
Description	This course describes the set of tools provided by PowerDELTA to edit CAD/Mesh data, in order to obtain watertight meshes as required by PowerFLOW. Each tool is explained within the context of the recommended geometry preparation process.
Objectives	Upon completion of this course you will be able to: - Understand basic geometry preparation requirements for PowerFLOW simulation. - Create and prepare watertight geometry using the tools available in PowerDELTA. - Analyze, identify, and correct mesh issues to produce high quality PowerFLOW meshes.
Prerequisites	Basic familiarity with CAD concepts and CFD
Available Online	Yes

Introduction to Isight	
Course Code	SIM-en-ISGT-F-V30R2023
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022 , SIMULIA 2023
Duration	14.17 hours
Course Material	
Level	Fundamental
Audience	The course is recommended for new Isight users and anyone else interested in learning more about Isight, including mechanical designers, analysts and methods developers.
Description	This course provides a practical introduction to Isight in which you will learn about process integration and parametric design optimization using Isight. The course includes many hands-on workshops and practical examples.
Objectives	
Prerequisites	None
Available Online	Yes

Introduction to PowerDELTA	
Course Code	SIM-en-PDINT-F-V30R2022
Available Releases	SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022
Duration	14.50 hours
Course Material	
Level	Fundamental
Audience	- CFD Analysist - CFD Modeler
Description	This two-day introductory class is intended for new users of PowerDELTA. This course is intended to complement the Introduction to PowerFLOW seminar, which describes how to perform CFD analyses with PowerFLOW.
Objectives	Upon completion of this course you will be able to: - Understand basic geometry preparation requirements for PowerFLOW simulation. - Create geometry for aerodynamics analysis simulation. - Analyze, identify, and correct mesh issues to produce high quality PowerFLOW meshes. - Efficiently prepare watertight geometry using the available editing tools.
Prerequisites	This course is recommended for new PowerDELTA users. Some familiarity with interactive preprocessors is helpful but not required. Basic familiarity with CFD is recommended.
Available Online	Yes

Introduction to PowerFLOW	
Course Code	SIM-en-PFINT-F-V30R2022
Available Releases	SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022
Duration	11.67 hours
Course Material	
Level	Fundamental
Audience	CFD Analysts
Description	This course is intended for new users of PowerFLOW or those who have recently started using PowerCASE® and PowerVIZ®. Simplified external aerodynamics flow around a passenger vehicle is used to explain key concepts, although sufficient information is provided to enable you to perform routine PowerFLOW simulations for any application.
Objectives	Upon completion of this course you will be able to: - Understand basic PowerFLOW concepts. - Generate a basic PowerFLOW aerodynamics simulation case. - Postprocess and analyze PowerFLOW results to understand basic aerodynamics application. - Understand basic geometry creation requirements for PowerFLOW simulation. - Understand basic Lattice Boltzmann Method theory.
Prerequisites	Basic familiarity with CFD
Available Online	Yes

Introduction to Tosca Fluid	
Course Code	SIM-en-TOSCFL-F-V30R2021
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021
Duration	9.17 hours
Course Material	
Level	Fundamental
Audience	CFD Analysts working with STAR-CD or ANSYS Fluent
Description	This course is a comprehensive introduction to the fluid optimization capabilities of Tosca Fluid. Attendees will learn how to define and solve basic topology optimization tasks for internal flow problems, submit optimization jobs, and view and evaluate the results.
Objectives	Upon completion of this course you will be able to: - Solve fundamental topology optimization problems for internal flow applications - Postprocess results and perform surface smoothing - Follow-up and transfer results into the CAEenvironment
Prerequisites	Basic familiarity with CFD
Available Online	Yes

Introduction to XFlow	
Course Code	SIM-en-XFINT-F-V30R2022
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022
Duration	8 hours
Course Material	
Level	Fundamental
Audience	Engineers with knowledge or experience in CFD
Description	This course introduces the XFlow Graphical User Interface (GUI), and shows how to run a simulation
Objectives	Upon completion of this course you will be able to: - Get started with the XFlow GUI - Set up a single phase simulation in XFlow - Post-process simulations in XFlow - Learn how to use the different lattice refinement schemes
Prerequisites	None
Available Online	Yes

Isight Component Development	
Course Code	SIM-en-ISCD-A-V30R2023
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022 , SIMULIA 2023
Duration	26.33 hours
Course Material	
Level	Advanced
Audience	Simulation Analysts
Description	Isight is a powerful tool for creating flexible simulation workflows using an extensive library of built-in components. However, it is possible to extend this library by developing custom components which can provide interfaces to third-party simulation codes and/ or extend existing components via custom plug-ins using the power of the Java development language. This course covers the process of designing, building, publishing, debugging and testing custom components and plug-ins, utilizing the Isight SDK. The course is highly interactive with a strong emphasis on practical workshops using a standard Integrated Development Environment (IDE).
Objectives	The topics discussed include the following: - Isight component architecture and introduction to the Isight SKD - Building and testing an Isight component with a custom User Interface - Interfacing with third-party simulation codes written in other languages such as Fortran - Extending the behavior of existing Isight library components - Introduction to the Isight developers plug-in and debugging features using Eclipse IDE

Isight Component Development	
	- Build a custom DOE (Design of Experiments) method plug-in
Prerequisites	The course is recommended for simulation analysts and methods developers who have experience with Isight. Students should be familiar with software development using the Java language.
Available Online	Yes

Optimizing Engineering Methods with Isight	
Course Code	SIM-en-ISOM-A-V30R2023
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022 , SIMULIA 2023
Duration	12.17 hours
Course Material	
Level	Advanced
Audience	Simulation Analysts, Scientists
Description	This course provides a brief overview of Isight and optimization before discussing nonlinear optimization theories and applications. Topics such as design space searching, multi-objective optimization, optimization strategy, and multidisciplinary optimization are covered. Attendees will learn key differences between the optimization algorithms offered in Isight, how to choose the preferred method based on the problem, how to remedy issues with run-time performance, and other topics relevant to improving the usage and value of Isight for real engineering optimization problems.
Objectives	The topics discussed include the following: - Design Space Exploration for Optimization problems - Optimization techniques (Gradient Based, Pattern Methods, Exploratory Methods) - Multi Objective Optimization - Nested Exploration and Adaptive DOE - Exploration techniques (Pointer and Pointer 2) - Optimization technique selection strategy
Prerequisites	Introduction to Isight
Available Online	Yes

Uncertainty Quantification with Isight	
Course Code	SIM-en-ISUQ-A-V30R2023
Available Releases	SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022 , SIMULIA 2023
Duration	8.25 hours
Course Material	
Level	Advanced
Audience	Simulation Analysts, Design Engineers, Quality Engineers, Manufacturing Engineers, Reliability Engineers, Students and anyone interested in performing stochastic analysis
Description	This course introduces Isight users to methods dealing with statistical behavior as a result of variability in the system. It motivates why uncertainty quantification (UQ) analysis is important, presents concepts and methods in Isight to do UQ analysis, and shows how to use Isight's open architecture to integrate user-developed algorithms into components as plug-ins.
Objectives	Upon completion of this course you will be able to: - Use various Isight components to perform stochastic analysis - Understand concepts used in Taguchi, Reliability and Six Sigma methods
Prerequisites	Introduction to Isight
Available Online	Yes

XFlow Advanced	
Course Code	SIM-en-XFADV-A-V30R2022
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022
Duration	16 hours
Course Material	
Level	Advanced
Audience	Engineers with knowledge or experience in CFD
Description	This course introduces the advanced features and scripting capabilities of XFlow
Objectives	Upon completion of this course you will be able to: - Understand the Lattice-Boltzmann Method used in XFlow - Use the different features available for all XFlow solvers: Single Phase, Free surface and Multiphase solvers - Set up internal and external simulations using all the solvers of XFlow - Set up thermal and acoustics analysis in XFlow - Set up simulations in XFlow with different moving parts behaviors - Handle all the postprocessing tools of XFlow - Use advanced features and scripting capabilities of XFlow
Prerequisites	- Before taking this course the completion of the following prequisite courses (or equivalent knowledge) is required: - XFlow Introduction - XFlow Intermediate
Available Online	Yes

XFlow Complete	
Course Code	SIM-en-XFLOW-A-V30R2022
Available Releases	SIMULIA 2018 , SIMULIA 2019 , SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022
Duration	40 hours
Course Material	
Level	Advanced
Audience	Engineers with knowledge or experience in CFD
Description	This course covers all the XFlow capabilities and how to set up, and postprocess all kind of simulations in XFlow
Objectives	Upon completion of this course you will be able to: - Understand the Lattice-Boltzmann Method used in XFlow - Use the different features available for all XFlow solvers: Single Phase, Free- surface and Multiphase solvers - Set up internal and external simulations using all the solvers of XFlow - Set up thermal and acoustics analysis in XFlow - Set up simulations in XFlow with different moving parts behaviors - Handle all the postprocessing tools of XFlow - Use advanced features and scripting capabilities of XFlow
Prerequisites	None
Available Online	Yes

XFlow Intermediate	
Course Code	SIM-en-XFMED-A-V30R2022
Available Releases	SIMULIA 2020 , SIMULIA 2021 , SIMULIA 2022
Duration	16 hours
Course Material	
Level	Advanced
Audience	Engineers with knowledge or experience in CFD
Description	This course covers the main features and physics of XFlow.
Objectives	Upon completion of this course you will be able to: - Understand XFlow geometries behaviors and set up simulations with the Enforced and Rigid Body Dynamics geometry behavior. - Import and visualize geometries, perform geometry and healing operations - Understand and use thermal models in XFLow - Understand and use the Free Surface and Multiphase solvers available in XFlow - Postprocess thermal simulations and external and internal Multiphase simulations in XFlow
Prerequisites	- Before taking this course the completion of the following prequisite courses (or equivalent knowledge) is required: - XFlow Introduction
Available Online	Yes

IF WE
TM