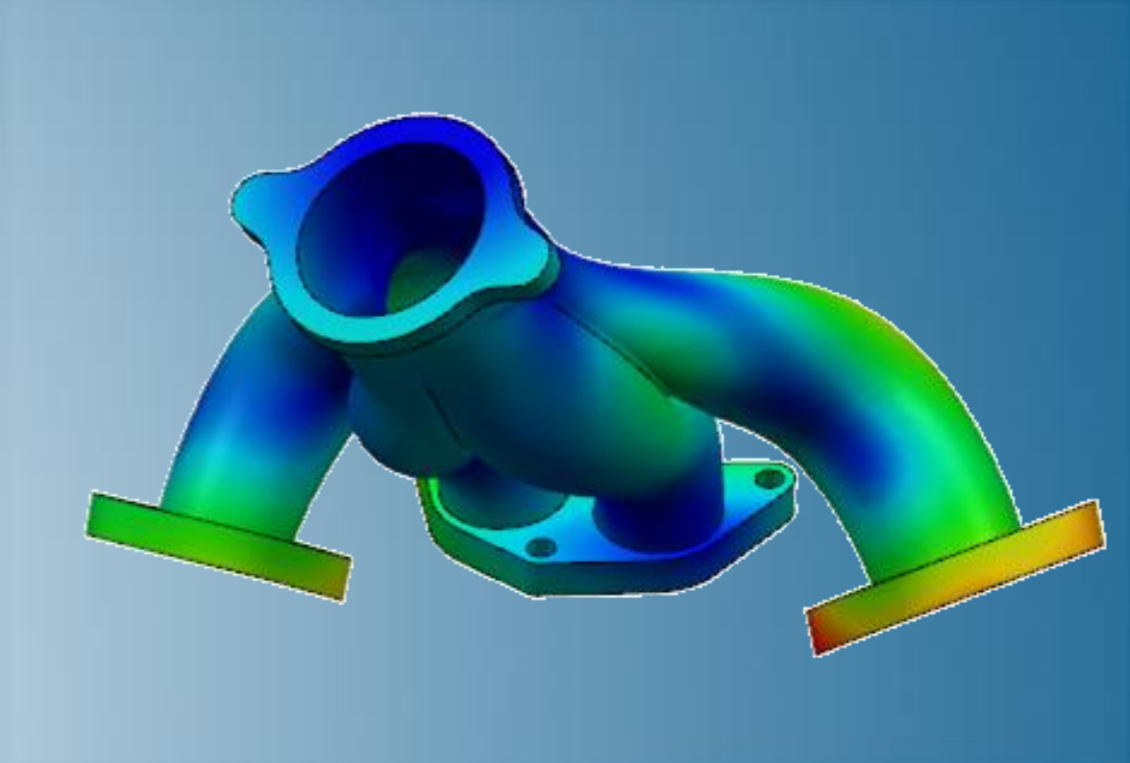


Mechanical Scenario Creation Essentials

R2017x



3DEXPERIENCE[®]



About this Course

Course objectives

Upon completion of this course you will be able to:

- ▶ Perform structural simulations (linear and nonlinear; statics and dynamics)
- ▶ Perform thermal simulations
- ▶ View and evaluate simulation results

Targeted audience

This course is intended for the following roles:

- ▶ Mechanical Analyst
- ▶ Multiphysics Simulation Researcher

Prerequisites

The following course is required prior to taking this one:

- ▶ Structural Model Creation Essentials



2 days

Day 1

- ▶ Lesson 1 Getting Started with Simulation
- ▶ Workshop 1 Linear Static Analysis of a Cantilever Beam

- ▶ Lesson 2 Steps and Static Simulations
- ▶ Workshop 2 Creep of a Pipe Intersection

- ▶ Lesson 3 Loads, Restraints and Initial Conditions
- ▶ Workshop 3a Analysis of a Reinforced Panel
- ▶ Workshop 3b Cantilever Beam with Multiple Load Cases

- ▶ Lesson 4 Contact
- ▶ Workshop 4 Pump Model – Steps, Loads, and Contact

- ▶ Lesson 5 Running Simulations and Postprocessing
- ▶ Workshop 5 Nonlinear Static Analysis of a Pump Assembly

Day 2

- ▶ Lesson 6 Dynamic Simulations
- ▶ Workshop 6 Vibrating Cantilevered Plate

- ▶ Lesson 7 Linear Dynamics
- ▶ Workshop 7a Frequency Analysis of an Exhaust Manifold
- ▶ Workshop 7b Harmonic Response Analysis of a Control Arm
- ▶ Workshop 7c Cargo Crane under Dynamic Loading

- ▶ Lesson 8 Nonlinear Dynamics
- ▶ Workshop 8 Pipe Whip Simulation

- ▶ Lesson 9 Quasi-static Simulations
- ▶ Workshop 9a Channel Forming
- ▶ Workshop 9b Bending of a Thin Tube

- ▶ Lesson 10 Heat Transfer Simulation (optional)
- ▶ Workshop 10 Thermal Simulation of a Pump Housing (optional)

Additional Material

- ▶ Appendix 1 Element Selection Criteria
- ▶ Appendix 2 Complex Eigenvalue Analysis
- ▶ Workshop 11 Brake Squeal Analysis

- ▶ Appendix 3 Smoothed Particle Hydrodynamics
- ▶ Workshop 12 Bird Strike on an Airplane Engine Blade

Join the Community!

How can you maximize the robust technology of the SIMULIA Portfolio ?
Connect with peers to share knowledge and get technical insights

Go to www.3ds.com/slc
to log in or join!



 SIMULIA

Let the SIMULIA Learning Community be *Your* Portal to 21st Century Innovation

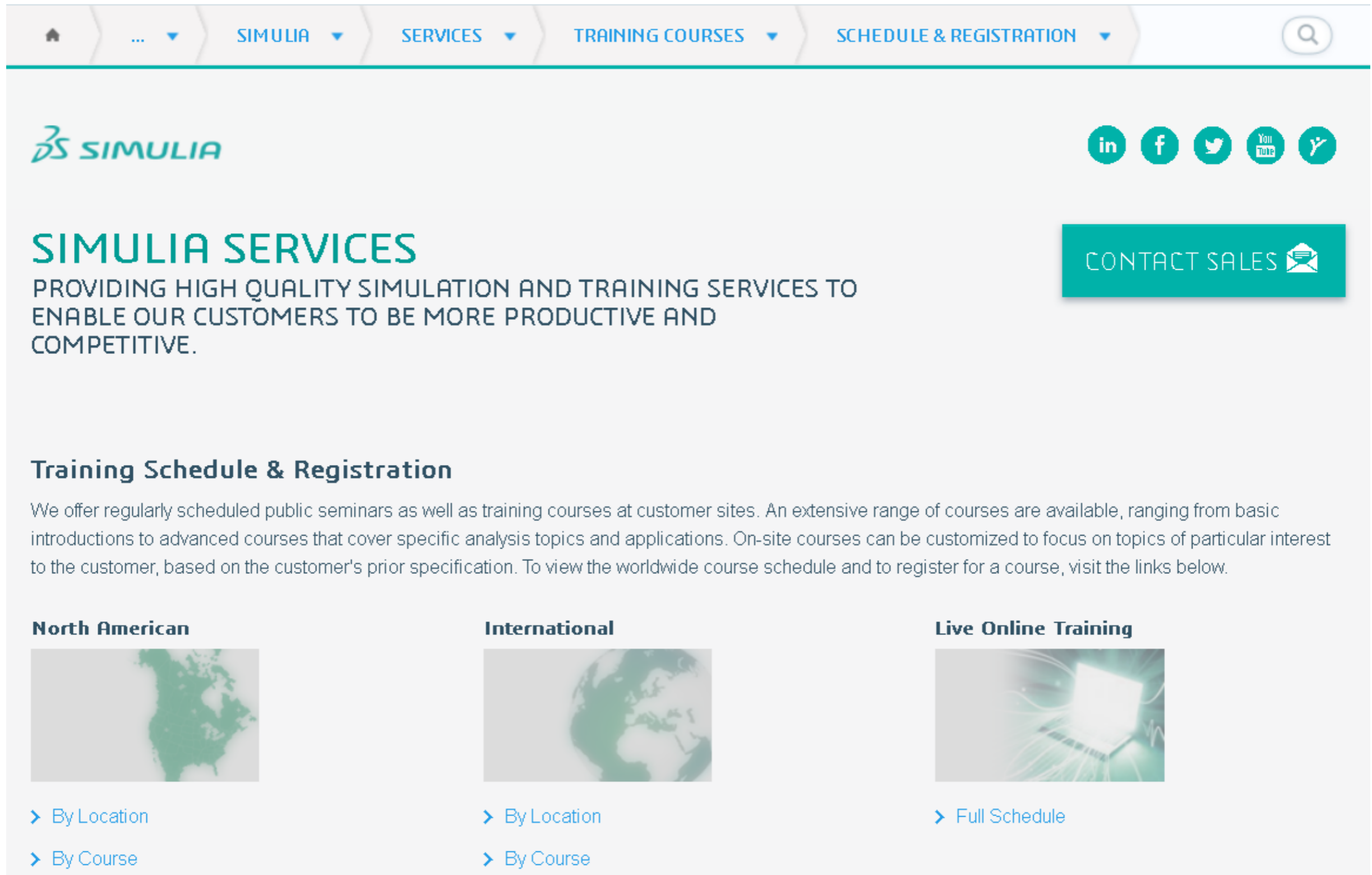
Discover new ways to explore how to leverage realistic simulation to drive product innovation. Join the thousands of Abaqus and Isight users who are already gaining valuable knowledge from the SIMULIA Learning Community.

For more information and registration, visit 3ds.com/simulia-learning.
Connect. Share. Spark Innovation.

 | The 3DEXPERIENCE Company

SIMULIA Training


<http://www.3ds.com/products-services/simulia/services/training-courses/>



Home ... SIMULIA SERVICES TRAINING COURSES SCHEDULE & REGISTRATION

SIMULIA

in f t YouTube

CONTACT SALES 


SIMULIA SERVICES

PROVIDING HIGH QUALITY SIMULATION AND TRAINING SERVICES TO ENABLE OUR CUSTOMERS TO BE MORE PRODUCTIVE AND COMPETITIVE.

Training Schedule & Registration


We offer regularly scheduled public seminars as well as training courses at customer sites. An extensive range of courses are available, ranging from basic introductions to advanced courses that cover specific analysis topics and applications. On-site courses can be customized to focus on topics of particular interest to the customer, based on the customer's prior specification. To view the worldwide course schedule and to register for a course, visit the links below.

North American




- > By Location
- > By Course

International



- > By Location
- > By Course

Live Online Training



- > Full Schedule

Legal Notices

The software described in this documentation is available only under license from Dassault Systèmes or its subsidiaries and may be used or reproduced only in accordance with the terms of such license.

This documentation and the software described in this documentation are subject to change without prior notice.

Dassault Systèmes and its subsidiaries shall not be responsible for the consequences of any errors or omissions that may appear in this documentation.

No part of this documentation may be reproduced or distributed in any form without prior written permission of Dassault Systèmes or its subsidiaries.

© Dassault Systèmes, 2017

Printed in the United States of America.

Abaqus, the 3DS logo, and SIMULIA are trademarks or registered trademarks of Dassault Systèmes or its subsidiaries in the US and/or other countries.

Other company, product, and service names may be trademarks or service marks of their respective owners. For additional information concerning trademarks, copyrights, and licenses, see the Legal Notices in the **3DEXPERIENCE** User Assistance.

Revision Status

Lesson 1	1/17	Updated for R2017x
Lesson 2	1/17	Updated for R2017x
Lesson 3	1/17	Updated for R2017x
Lesson 4	1/17	Updated for R2017x
Lesson 5	1/17	Updated for R2017x
Lesson 6	1/17	Updated for R2017x
Lesson 7	1/17	Updated for R2017x
Lesson 8	1/17	Updated for R2017x
Lesson 9	1/17	Updated for R2017x
Lesson 10	1/17	Updated for R2017x
Appendix 1	1/17	Updated for R2017x
Appendix 2	1/17	Updated for R2017x
Appendix 3	1/17	Updated for R2017x

Workshop 1	1/17	Updated for R2017x
Workshop 2	1/17	Updated for R2017x
Workshop 3a	1/17	Updated for R2017x
Workshop 3b	1/17	Updated for R2017x
Workshop 4	1/17	Updated for R2017x
Workshop 5	1/17	Updated for R2017x
Workshop 6	1/17	Updated for R2017x
Workshop 7a	1/17	Updated for R2017x
Workshop 7b	1/17	Updated for R2017x
Workshop 7c	1/17	Updated for R2017x
Workshop 8	1/17	Updated for R2017x
Workshop 9a	1/17	Updated for R2017x
Workshop 9b	1/17	Updated for R2017x
Workshop 10	1/17	Updated for R2017x
Workshop 11	1/17	Updated for R2017x
Workshop 12	1/17	Updated for R2017x

Lesson 1: Getting Started with Simulation Scenarios

Lesson content:

- ▶ Simulation Apps in the **3DEXPERIENCE** Platform
- ▶ Physics Modeling Apps
- ▶ Finite Element Model Representation
- ▶ Workflow to create, execute and review a simulation
- ▶ Scenario
- ▶ The Scenario Interface
- ▶ Results
- ▶ Simulation Conventions in the **3DEXPERIENCE** Platform
- ▶ Workshop Preliminaries



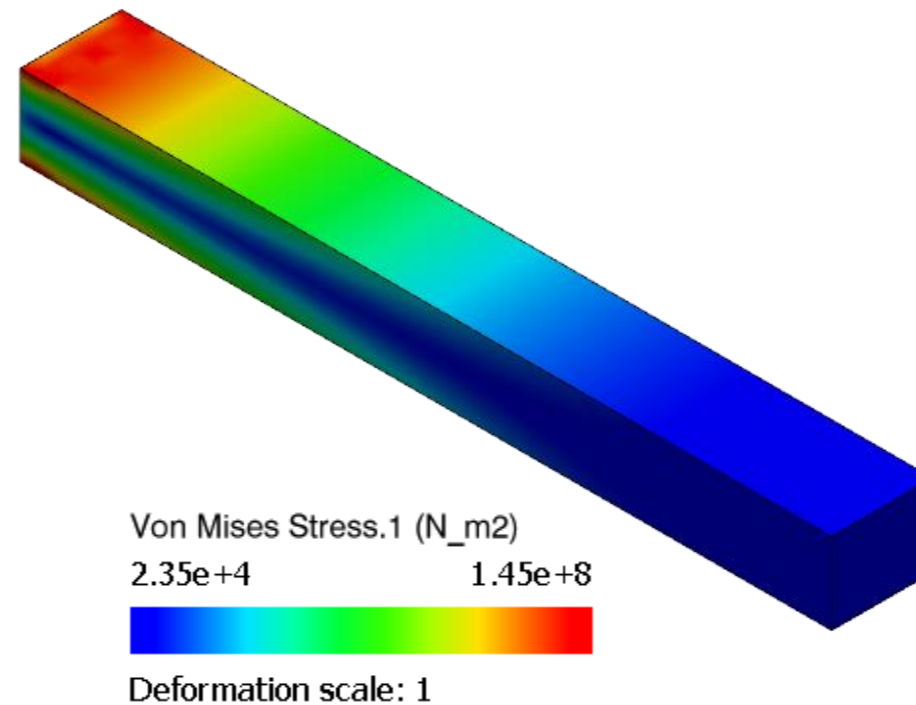
30 minutes

Workshop: Linear Static Analysis of a Cantilever Beam

In this workshop you will become familiar with the different apps that are used to set up and execute a simulation. The geometry of the cantilever beam shown below is provided. You will create a tetrahedral mesh, assign a material, create a section property, create a simulation and execute it. Afterwards, as an optional exercise, you will create and use a FEM rep with a hexahedral mesh.

After completion of this exercise, you will be:

- Familiar with the layout and structure of the **3DEXPERIENCE** Platform.
- Able to set up a simple simulation.
- Familiar with navigating between different apps.



45 minutes

Lesson 2: Steps and Static Simulations

Lesson content:

- ▶ Simulation Steps and Procedures
- ▶ Overview of Nonlinear Problems
- ▶ Overview of Static Simulation
- ▶ Understanding Nonlinear Static Simulation
- ▶ Understanding Implicit Methods
- ▶ Creating Static Steps
- ▶ Options for Static Steps
- ▶ Understanding Perturbation Procedures
- ▶ Creating Static Perturbation Steps
- ▶ Understanding Multistep Simulations
- ▶ Analysis Cases



45 minutes

