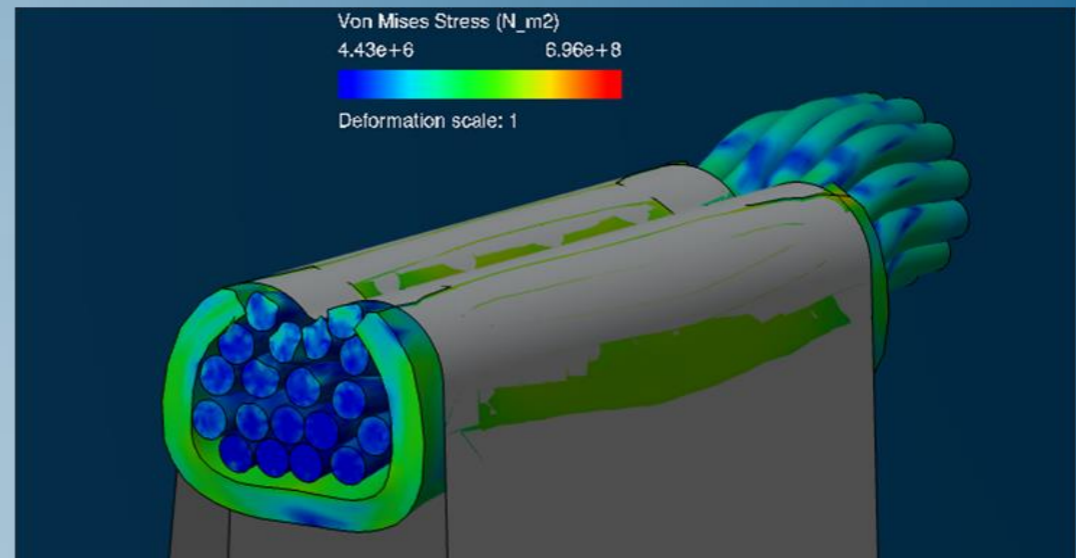


# Structural Scenario Creation Essentials

R2017x



**3DEXPERIENCE**<sup>®</sup>



# 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:

- ▶ Structural Analysis Engineer
- ▶ Steel Ship Structural Analysis Engineer

## Prerequisites

The following course is required prior to taking this one:

- ▶ Structural Model Creation Essentials



1 day

# Day 1

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- ▶ 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
  
- ▶ Lesson 6            Dynamic Simulations
- ▶ Workshop 6a        Vibrating Cantilevered Plate
- ▶ Workshop 6b        Cargo Crane under Dynamic Loading (optional)
  
- ▶ Lesson 7            Heat Transfer Simulation (optional)
- ▶ Workshop 7        Thermal Simulation of a Pump Housing (optional)

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## Revision Status

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<b>Lesson 1</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Lesson 2</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Lesson 3</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Lesson 4</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Lesson 5</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Lesson 6</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Lesson 7</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 1</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 2</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 3a</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 3b</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 4</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 5</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 6a</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 6b</b>	<b>1/17</b>	<b>Updated for R2017x</b>
<b>Workshop 7</b>	<b>1/17</b>	<b>Updated for R2017x</b>

# 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

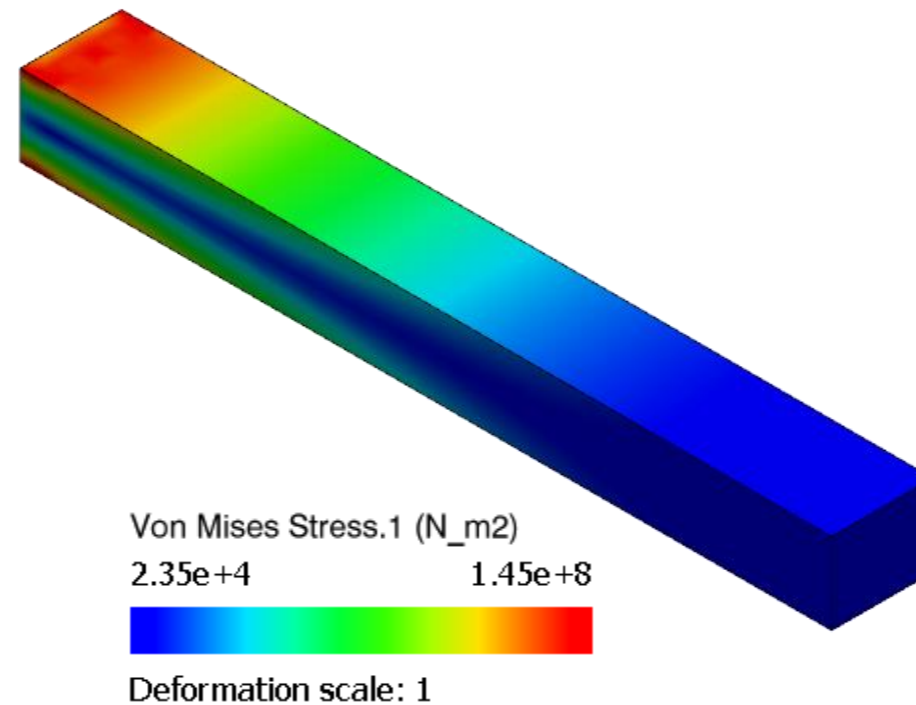


# Workshop: Linear Static Analysis of a Cantilever Beam

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

