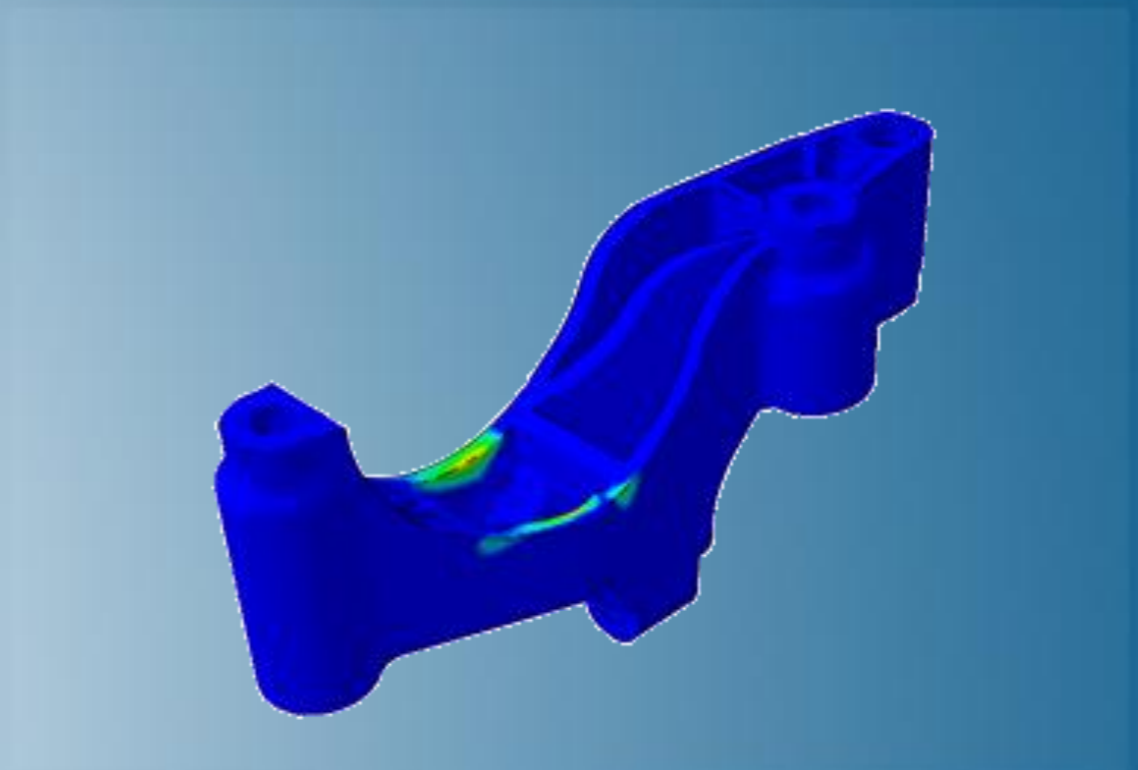


Durability Validation Essentials

R2016x



3DEXPERIENCE



About this Course

Course objectives

Upon completion of this course you will be able to:

- ▶ Search and open simulations in the database
- ▶ Understand the class of durability loads that can be applied
- ▶ Perform a durability simulation
- ▶ Apply loading history to represent real-world usage
- ▶ Understand when surface finish can be applied
- ▶ Review simulations stored in a database and generate reports

Targeted audience

This course is intended for the following role:

- ▶ Stress Engineer

Prerequisites

The following course is required prior to taking this one:

- ▶ Structural Validation Essentials



4 hours

Day 1

- ▶ Lesson 1 Durability Validation
- ▶ Workshop 1 Durability Analysis of a Steering Knuckle
- ▶ Workshop 2 Durability Analysis of a Titanium Hip Implant
- ▶ Workshop 3 Durability Analysis of a Connecting Rod Assembly (optional)

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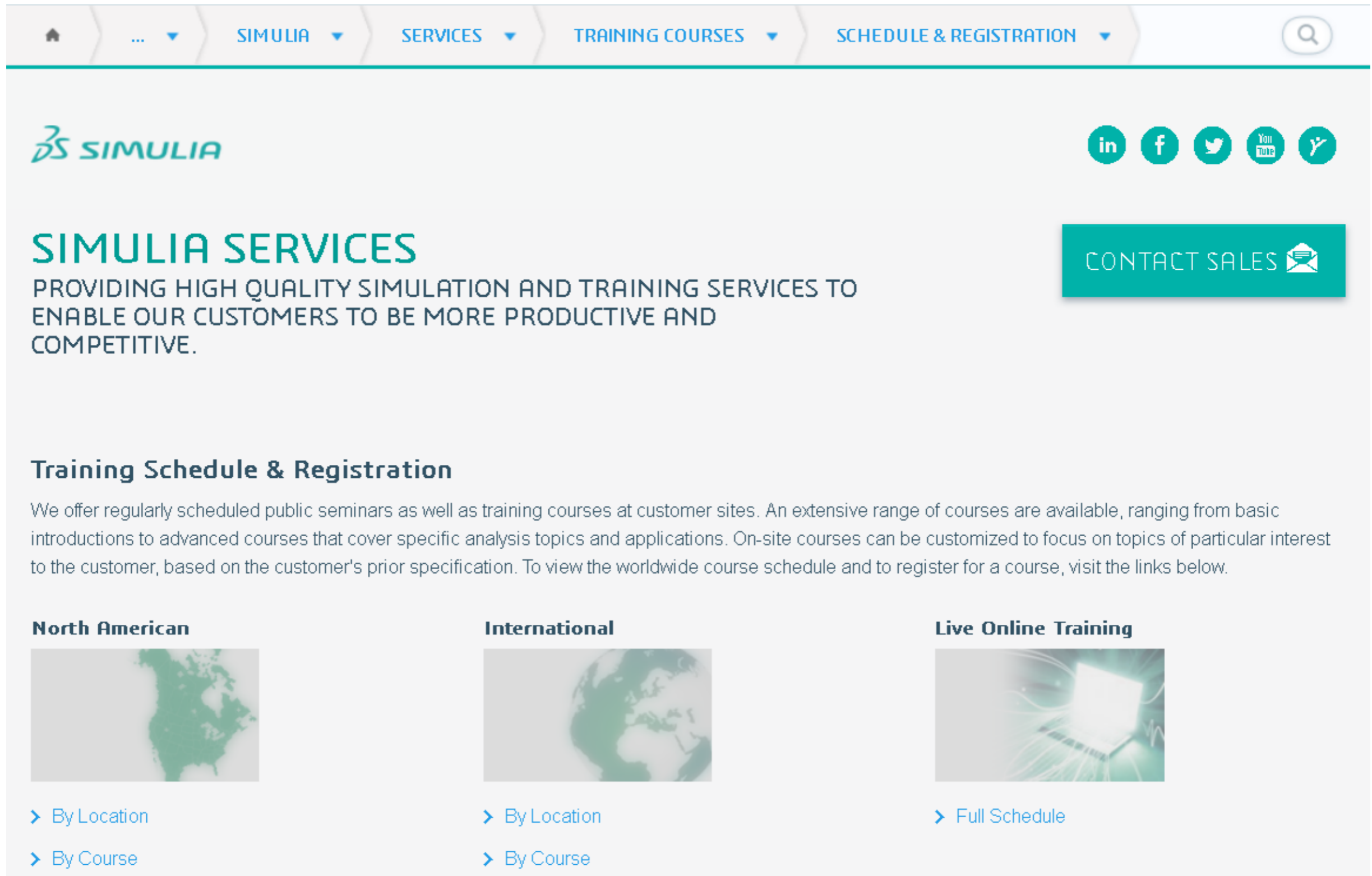
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Revision Status

Lesson 1	1/16	Updated for R2016x
Workshop 1	1/16	Updated for R2016x
Workshop 2	1/16	Updated for R2016x
Workshop 3	1/16	Updated for R2016x

Lesson 1: Durability Validation

Lesson content:

- ▶ Introduction
- ▶ Basics
- ▶ Running a Simulation
 - Step 1: Parts
 - Step 2: Materials
 - Step 3: Connections
 - Step 4: Restraints
 - Step 5: Loads
 - Step 6: Durability
 - Step 7: Simulate
 - Step 8: Results
- ▶ Workshop Preliminaries



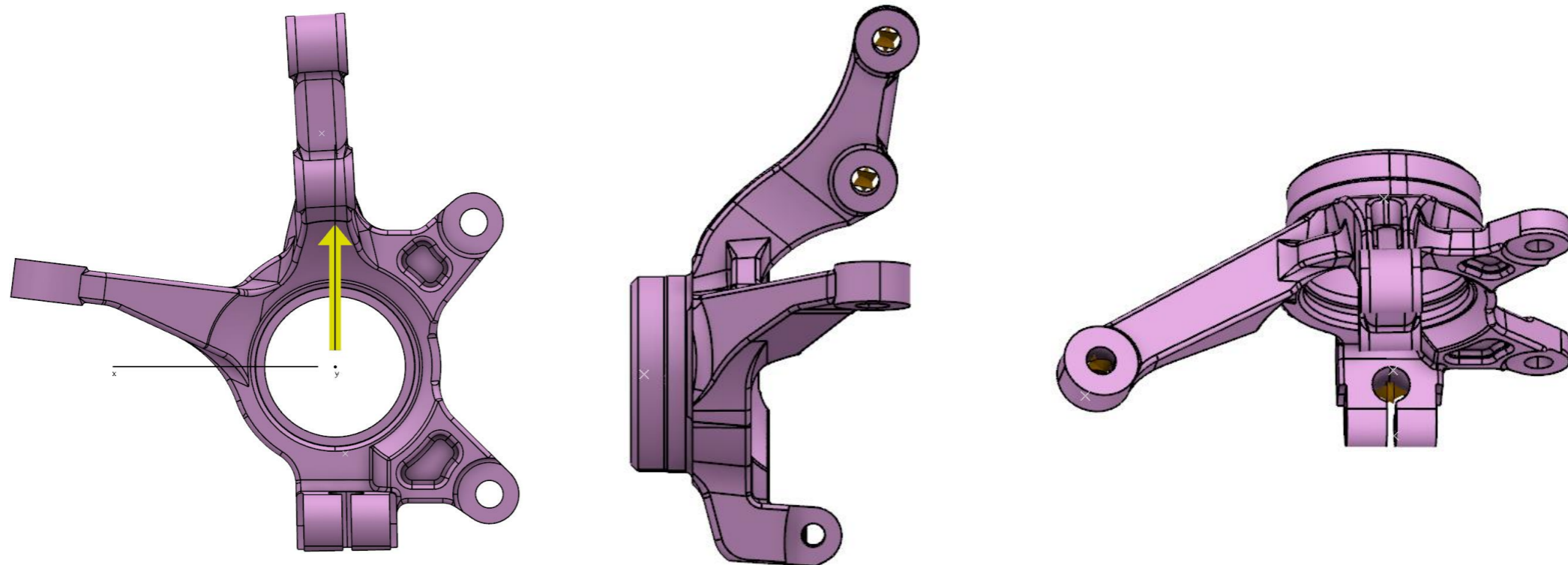
1.5 Hours

Workshop 1: Durability Analysis of a Steering Knuckle

In this workshop, the durability simulation of a steering knuckle will be performed. The part has already been included in a simulation using Durability Validation and the materials, loads, restraints, and connections are already defined. You will import the existing simulation, complete the durability settings, and perform the simulation.

Upon completion of this workshop you will be able to:

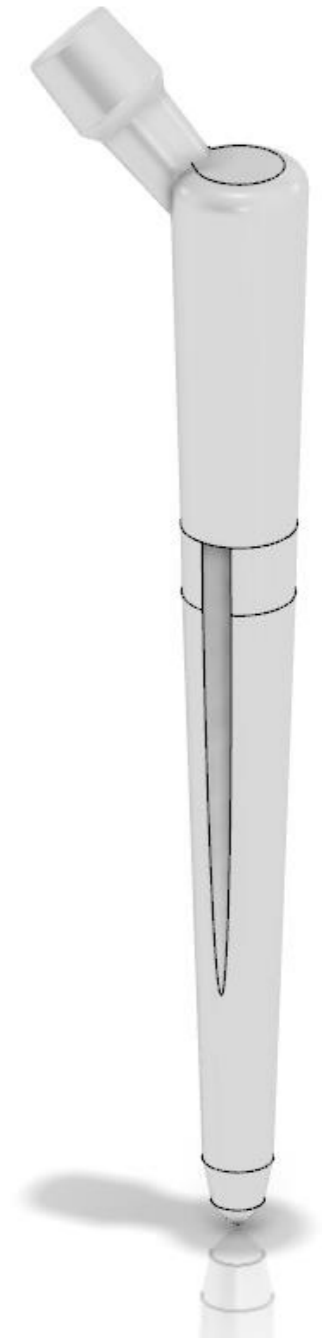
1. Import a simulation and open it in the Durability Validation app
2. Configure the durability load history
3. Apply surface finish
4. Simulate and review results



30 Minutes

Workshop 2: Durability Analysis of a Titanium Hip Implant

In this workshop, we consider the durability of a hip implant; the geometry is shown at right. The implant is inserted into the femur and fixed with bone cement. Simulation is required to shorten the design cycle and then test the final design. The analysis will include applying loads and boundary conditions as well as durability settings. We will compare two loading definitions and determine which one is more severe.



1 hour

