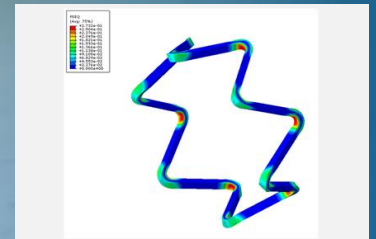


MODELING STENTS USING ABAQUS

SIMULIA COURSE DESCRIPTION



Level: Advanced
Products: Abaqus
Disciplines: Structures

Audience
 This course is recommended for simulation analysts responsible for the design of medical devices.

Why take this course?

The simulation of stent behavior reveals detailed stress-strain distributions that are important in predicting device fatigue life. The complex geometry and material behavior of stents result in highly nonlinear and challenging analyses. This course focuses on the use of Abaqus for modeling and analyzing stents. However, its content can also be useful when modeling other types of medical devices. The course is targeted at engineers responsible for the design of medical devices who are looking to accelerate their understanding of the highly complex mechanical behavior associated with performance of such devices. This course will also prepare attendees to take the next step to simulate stent behavior through in silico representations of the vasculature and using the Living Heart Human Models.

What will you learn?

Upon completion of this course you will be able to:

- Create geometry for modeling stents and tools
- Choose the proper element type
- Choose material models: elastic-plastic (Stainless Steel), superelastic-plastic (Nitinol), hyperelastic (vessels)

- Perform stent analyses: Static, Implicit and Explicit Dynamics
- Define contact and constraints
- Postprocess stent analyses
- Perform fatigue evaluation

Explore Your Learning Options

Live Sessions	Engage in Real-Time, interactive group workshops guided by experts. Learn and collaborate live in your preferred language and time zone.	Join a live session
On-Demand Learning	Access expert-designed courses anytime, anywhere. Perfect for independent learners looking to build skills on their schedule.	Start Learning Now
Private Training	Exclusive, tailor-made sessions designed to meet your team's unique goals with expert guidance.	Contact Us for Custom Training



Gain hands-on experience and master real-world workflows through guided, practical training sessions.

Apply nonlinear analysis techniques to simulate complex structural and multiphysics problems accurately.

– SIMULIA Training Expert Team

What You Need to Know Before Starting

This course is recommended for engineers with experience using Abaqus. Some understanding of Abaqus/CAE is helpful but is not required.

Agenda for Virtual Live Sessions

Participate in hands-on, real-time workshops where you'll gain practical expertise. Here's what you'll cover:

[Join an Instructor Led Session](#)

Day 1

Lesson 1: Introduction
Lesson 2: Geometry and Meshing
Lesson 3: Element Selection and Mesh Convergence
Workshop 1a: Balloon-expanded Stent – Geometry and Meshing
Workshop 1b: Self-expanding Stent – Geometry and Meshing
Lesson 4: Material and Section Properties
Workshop 2a: Balloon-expanded Stent – Materials and Sections
Workshop 2b: Self-expanding Stent – Materials and Sections

Additional Material

Appendix 1: Nitinol Fatigue
Workshop 6: Nitinol Fatigue: Stent Fatigue fe-safe

Day 2

Lesson 5: Analysis Procedures
Lesson 6: Loads, Contact and Constraints
Workshop 3a: Balloon-expanded Stent – Analysis Setup
Workshop 3b: Self-expanding Stent – Analysis Setup
Lesson 7: Postprocessing Stent Analyses
Workshop 4a: Balloon-expanded Stent – Postprocessing
Workshop 4b: Self-expanding Stent – Postprocessing
Workshop 5: Nitinol Fatigue: Stent Fatigue Example

Want to Learn More?

Expand your knowledge by exploring our [course Catalog](#) and browsing learning paths on [Eduspace](#), our dedicated e-learning platform.

Join the Community!

[Join the SIMULIA community](#) to connect, learn, and stay updated.



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