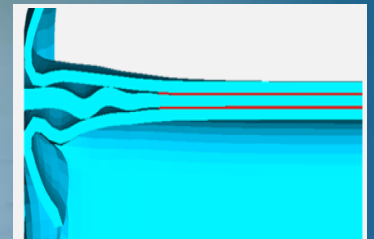


ANALYSIS OF COMPOSITE MATERIALS WITH ABAQUS

SIMULIA COURSE DESCRIPTION



Level: Advanced
Products: Abaqus
Disciplines: Structures

Audience
 This course is recommended for simulation analysts whose work involves composite materials.

Why take this course?

Composite materials are used in many design applications because of their high stiffness-to-weight ratios. This course shows you how to use Abaqus effectively to model composite materials.

What will you learn?

Upon completion of this course you will be able to:

- Define anisotropic elasticity for combining the fiber-matrix response
- Define composite layups using Abaqus/CAE
- Achieve the correct material orientation of the layers of composite shells and solid elements
- Model sandwich composite structures and stiffened composite panels
- Model progressive damage and failure in composites
- Model delamination and low-cycle fatigue of composite structures

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

Introduction to Abaqus or equivalent and experience using Abaqus.

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: Macroscopic Modeling
Lesson 3: Laminate Modeling
Workshop 1: The Pagano Plate Problem
Lesson 4: Composite Modeling with Abaqus
Workshop 2a: Buckling of a Laminate Panel
Workshop 2b: Composite Wing Section
Workshop 3: Composite Yacht Hull (Optional)

Day 3

Lesson 8: Reinforcement Modeling
Lesson 9: Modeling of Sandwich Composites
Workshop 7: Bending of a Sandwich Beam
Lesson 10: Modeling of Stiffened Panels
Workshop 8: Bending of a Reinforced Flat Panel under Uniform Pressure
Lesson 11: Fatigue Crack Growth at Material Interfaces
Workshop 9: Fatigue Crack Growth in a DCB Specimen

Day 2

Lesson 5: Modeling Damage and Failure in Composites
Lesson 6: Cohesive Behavior
Workshop 4: Analysis of a DCB using Cohesive Behavior
Lesson 7: Virtual Crack Closure Technique (VCCT)
Workshop 5: Analysis of a DCB using VCCT (Abaqus/Standard)
Workshop 6: Analysis of a DCB using VCCT (Abaqus/Explicit)

Additional Material

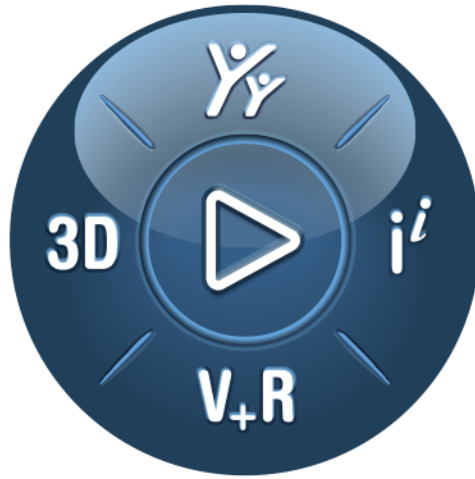
Appendix 1: Debond Capability
Appendix 2: Cohesive Element Modeling Techniques
Appendix 3: More on Continuum Shell Elements
Appendix 4: Alternative Modeling Techniques
Appendix 5: Modeling Composite Material Impact
Workshop 10: Perforation of a Composite Plate
Appendix 6: Material Orientation Examples
Appendix 7: Modeling Curing Processes in Polymers
Appendix 8: Multiscale Modeling
Workshop 11: Correlating MFH Results with FE-RVE
Appendix 9: Damage in Multiscale Modeling

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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