



Livermore Software Technology Corp.

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Contact: classes@lstc.com www.lstc.com/training

Composite Materials in LS-DYNA

Instructor: Dr. Ala (AI) Tabiei atabiei@lsdyna-online.com

2 Days - \$1,250 Students \$625 w/student ID

Includes on-site continental breakfasts, lunches, breaks, class dinner

Includes 30-day LS-DYNA demo license to practice

Description: This class is designed for students to use LS-DYNA to analyze problems using sandwich and composite materials in the area of deformation and strength composites. It will provide analysts with the additional tools and knowledge required to model composite materials. The typical attendee is likely to have a background in composite material applications. Examples are used to illustrate the points made in the lectures.

Course Contents:

Introduction

Mechanics of Composite Materials

1. Lamina
2. Symmetric Laminate with in-plane loads
3. Symmetric Laminate with bending and twist loads
4. Symmetric Laminate with both in-plane and flexural loads
5. Un-symmetric Laminate
6. Strength and Failure

Shell Theories

Failure Theories

Lamination Theory and Transverse Shear

List of all LS-DYNA Composite Materials

Modeling Delamination in LS-DYNA

Cohesive Elements

Flexible Loose Woven Fabric (material models developed by Tabiei)

Sandwich Composites

1. Through Thickness Integration
2. Sandwich Material Models

Composite Micro-Mechanics Models (user-defined materials as examples)

1. Woven Composites
2. Strain Rate Effect
3. Fiber Reorientation

Manufacturing Simulations of Composites

Crashworthiness of Composites

What Material Model for What Composites?