



Locations:

Livermore Software Technology Corp.

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Composite Materials in LS-DYNA

Instructor: Dr. Ala (Al) Tabiei

2 Days - \$1,250 Students \$950 w/student ID

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

Includes 30-day LS-DYNA demo license to practice

Prerequisite: Introduction to LS-DYNA Class.

Students should have a command of the LS-DYNA keywords and options associated with composites.

Description: The 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

Examples are used to illustrate the points made in the lectures.

- **Introduction**
- **Mechanics of Composite Materials**
 - Lamina
 - Symmetric Laminate with in-plane loads
 - Symmetric Laminate with bending and twist loads
 - Symmetric Laminate with both in-plane and flexural loads
 - Un-symmetric Laminate
 - Strength and Failure
- **Shell Theories**
- **Failure Theories**
- **Lamination Theory and Transverse Shear**
- **List of all LS-DYNA Composite Materials**
- **Sandwich Composites**
 - Through Thickness Integration
 - Sandwich Material Models
- **Composite Micro-Mechanics Models (user-defined materials as an examples)**
 - Woven Composites
 - Strain Rate Effect
 - Fiber Reorientation
 - Flexible loose Woven Fabric

Workshop: There will be several examples, which are designed to understand and reinforce the lectures and the concepts presented. The course will provide users with experience of running and trouble-shooting LS-DYNA composite materials analysis.