



**Locations:**

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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.