Composites In LS-DYNA

This course will allow first time LS-DYNA users to model composite materials. The most important elements to start using all the composite material models in LS-DYNA will be presented in the 8 hours. There is a one day (8 hours) of workshop which is part of the course.

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 LSDYNA Composite Materials

Modeling Delamination in LSDYNA

Cohesive Elements

Flexible Loose Woven Fabric (mat 234 and 235 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