



Locations:

Livermore Software Technology Corp.

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Fracture, Damage & Failure Using LS-DYNA

Instructor: Dr. Ala (Al) Tabiei

1.5 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, or equivalent experience.
Students should have a command of the LS-DYNA keywords and options associated with fracture, damage and failure materials

Description: This advanced class is on failure and fracture in LS-DYNA. It provides information on the use of LS-DYNA for most problems that involve failure and fracture. The class will provide understanding of what formulation is used for a particular situation.
Examples are used to illustrate the points made in the lectures.

Course Outline

- **Introduction and Historical Review**
 - Brittle Failure
 - Ductile Failure
 - **Introduction and Fundamental Theoretical Concepts**
 - Failure Theories
 - Damage Models
 - Fracture Mechanics
 - **Element Erosion Advantages & Short Comings (solution to the problem)**
 - **Current LS-DYNA Capabilities to Model Failure and Damage**
 - **Current LS-DYNA Capabilities to Model Fracture**
 - **Fracture in Lagrangian, Eulerian, SPH, XFEM, EFG, and DEM Methods**
 - **LS-DYNA Fracture Capabilities Verification examples**
 - **MAT_ADD_EROSION and the GISSMO Model**
 - **Material Models with Failure**
 - Isotropic Materials
 - Hyperelastic Materials
 - Composite Materials
 - Geotech Materials
 - **Modeling Delamination and Debonding in LSD-YNA**
 - Cohesive Elements
 - Tied Contact with Failure
 - **Summary and Concluding Remark**
- Workshop:** There will be several examples, which are designed to understand and reinforce the lectures and the concepts presented in the course.
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