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Introduction to LS-DYNA®

Instructor will be either: **A Tabiei, A. Nair, R Chivukula, H. Devaraj, S. Adya**

4 Days - $750, Students $375 w/student ID
Includes on-site continental breakfasts, lunches, breaks, class notes, class dinner
Includes 30-day demonstration license

Prerequisite: Students should be familiar with basic Finite Element methods.

Objective: Provide an introduction to LS-DYNA where basic capabilities are reviewed. Detailed descriptions and requirements are given for data preparation with examples. Pre- and post-processing using LS-PrePost is covered.

Description: This course is recommended for those who perform nonlinear static and transient simulations. Attendees working in nearly all fields of engineering will benefit. This course is a prerequisite for the advanced courses covering the multi-physics capabilities which include compressible and incompressible fluids, the airbag particle method, Arbitrary Lagrangian-Eulerian (ALE) fluids, thermal, acoustics, vibro-acoustics, metal forming, electromagnetics, discrete elements, failure, frequency response methodology, and isogeometric analysis.

LS-DYNA Contents:

Contents

- Material Nonlinearity
- Running LS-DYNA
  - Execution and Output Files
    - ASCII
    - Binary
- Output Control
- FE Modeling Techniques
  - Engineering a FEA Model
  - Element Selection
    - Discrete (formulation of elastic and nonlinear elastic spring)
    - Beam
    - Shell (description of the various shell formulations)
    - Solid (description of the various solid formulations)
    - Thick Shell
  - Boundary, and Initial Conditions, Symmetry
  - Modeling for Physical Phenomenon
  - Ad-Hoc Guidelines
  - How to Tell if your Results are Correct
    - Error, debugging, and other useful information (d3hsp)
- Time Integration
  - The Equations of Motion
    - Implicit
    - Explicit
- Explicit Time Integration
  - Time Step Calculation
- Reduce–Selective Integration
- Hourglass Phenomenon
- Contact and Slide Surfaces
  - Friction
- Damping
- Restart
- Quasi-Static Simulations
  - Why Static Analysis With Explicit Code
- Mass Scaling