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Blast Using LS-DYNA

Instructor: Dr. Ala (Al) Tabiei
3 Days - $1000 Students $500 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 typical Lagrangian analyses.

Description: The class is designed for students to use LS-DYNA analyze blast loadings on vehicles (IED and mines), as well as proective barrier. Some mathematical theory is presented for each technique, especially Eulerian and Mesh-free Methods.
Examples are used to illustrate the points made in the lectures.

1. Introduction
- a. Introduction to Wave Propagation
- b. Numerical Techniques to solve High energy problems
  - Lagrangian - Eulerian & ALE
  - SPH & EFG - DEM
- c. Sample applications

2. Blast Modeling
- a. Blast Wave Simulations Techniques
- b. Blast Mitigation Techniques
- c. Applications: Vehicles

3. Under Water Blast
- a. Simulation Techniques

4. Material Behavior Under Severe Loading
- a. Material Models Library
- b. Strain Rate Effect
- c. What is Available That Works for the Defense Problems
  - Isotropic
  - Composites
  - Soil iv. Concrete

5. Failure and Damage Modeling
- a. Fracture
- b. Damage
- c. Element Erosion

6. Hybrid-III Dummy Response to Blast
- a. Dummy models and dummy response to blast

7. Blast Mitigation Structures (literature review)
- a. Blast mitigation concepts
- b. Seat designs for blast mitigation
- c. Blast energy absor ption seat components

8. Modeling Techniques
- a. Mesh design
- b. Problem initialization
- c. Post-processing

9. References