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 protective 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 absorption seat components

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

9. References