



## Post-Conference Training

**June 6-7, 2012** (Wed-Thur), 9a-5p, **University of Michigan-Dearborn**  
(two days, includes light continental breakfast at 8:30am, lunch each day)

**Please Note:** Final course selection, BASED ON REGISTRATION RESPONSE, will be announced May 1, 2012.  
Registration Confirmations will be sent to registered students after this date.

**Course Fee: \$450** (Students with valid ID: \$250)

### **Blast & Penetration Using LS-DYNA®**

Instructor: Ala Tabiei, Ph.D.

## COURSE OUTLINE

### 1. Introduction

Introduction to Wave Propagation:

- Wave propagation in incompressible material
- Wave propagation in compressible material

Numerical Techniques to solve high-energy problems:

- Lagrangian
- Eulerian and ALE
- SPH
- EFG

Sample Applications

### 2. Blast & Penetration

Blast Wave Simulations Techniques

Applications:

- Vehicles
- Underwater structures
- Buildings with windows

### 3. Material Behavior Under Severe Loading

Strain Rate Effect

Material Models Library

What is available that works for the defense problems:

- Isotropic
- Composites
- Soil
- Concrete

### 4. Failure and Damage Modeling

Fracture

Damage

Element erosion

### 5. Hybrid-III Dummy Response to Blast

Dummy models

Dummy response to blast

### 6. Blast Mitigation Structures

Blast Mitigation Concepts

Blast Mitigation Civil/Structures

Seat Design for Blast Mitigation

### 7. Bomb Modeling

Shape charges, EFP, IED

Bomb fragmentation modeling

### 8. Modeling Techniques

Mesh design

Problem Initialization

Post-processing

### 9. Impact Data Reduction & Analysis

Filtering the data

Intermittent eigen value analysis

### 10. Workshop

Several training workshop problems presented