



**Locations:**

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## Discrete Element Method (DEM)

**Instructor: Hailong Teng**

**1 Day - \$200, Students \$100** w/student ID

Includes on-site continental breakfast, lunch, breaks and class notes

**Prerequisite:** Prerequisite is not required

**Objective:** To introduce the Discrete Element Method in LS-DYNA. Attendees will learn how to set up, run, and post-process these DEM specific simulations in order to make engineering decisions on new and existing designs. At the end of the course, attendees will better understand the basic concepts and governing principles, the capabilities and limitations of DEM, and be able to solve basic engineering numerical analysis and simulation using DEM.

**Description:** In contrast with Finite Element Methods that treat the medium as a continuum, the Discrete Element Method (DEM) treats the medium as a discontinuum. The emphasis of Discrete Element Method is therefore in reproducing the mechanics of contacts and impacts between the materials consists of a large number of separate, discrete particles. Discrete Element Method has been applied to various dynamic problems including granular mechanics, soil-related interaction problems, geotechnical engineering, power production, pavement engineering, structural engineering, et al.

**Content:**

1. Introduction to the Discrete Element Method
  - a. Example of application of DEM
  - b. Theoretical background of the DEM
2. Introduction to the DES in LS-DYNA
  - a. Main Keywords.
  - b. DES parameters
  - c. Generating DEM Particles in LS-PrePost®
  - d. Post-Processing DEM Models using LS-PrePost®
  - e. Application of DES
3. Interaction between DEM Particles and Structure
4. General Comments
  - a. Strengths
  - b. Weaknesses
5. Coupling to Particle Blast Method
6. Bond Models for the simulation of continua
7. Adaptive analysis of solid elements with DEM
8. References