



## **Finite Element Modeling using Hypermesh**

**Duration: 40 Hrs.**

### **Chapter 1: Introduction to FEA**

- a. Introduction to Finite Element Analysis
- b. Basic steps in Finite Element Analysis
- c. FEM methods and detailed explanation of any one method
- d. Types of analysis
- e. Basic element study: 1D, 2D, 3D
- f. Shape Function
- g. Derivation of Stiffness Matrix Equation

### **Chapter 2: Introduction to Hypermesh**

- a. About Altair HyperWorks and its products
- b. About Hypermesh
- c. Consistent Units
- d. Getting Started With HyperMesh
- e. Opening and Saving Files
- f. Working With Panels
- g. Organizing a Model
- h. Controlling the Display
- i. Workshop

### **Chapter 3: Geometry Clean-up**

- a. Hypermesh Geometry Terminology
- b. Importing and Repairing CAD Geometry
- c. Generating a Midsurface
- d. Simplifying Geometry
- e. Midsurface
- f. Defeaturing

### **Chapter 4: Shell Meshing**

- a. Automeshing
- b. Checking and Editing Mesh
- c. 2D Shell Meshing and Topology Refinement
- d. Refining Topology to Achieve a Quality Mesh
- e. Batch Meshing
- f. Element quality checks

### **Chapter 5: 3D Solid Meshing**

- a. Standard Tetra Meshing
- b. Volume Tetra Meshing
- c. Tetrameshing
- d. Using The Tetramesh Process Manager

e. Element quality checks

## **Chapter 6: 1D Meshing and Connectors**

## **Chapter 7: Analysis Setup and Loading**

- a. Setting up Loading Conditions
- b. Analysis Setup and Loading

## **Chapter 8: Exporting and Solving**

- a. Exporting FE data to various Solvers like ANSYS, LS Dyna and Radioss
- b. Postprocessing

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