IFS ACADEMY

Training For The Future!!

Advanced Finite Element Analysis using ANSYS Workbench

Course Curriculum (Duration: 60 Hrs.)

Chapter 1: Overview of ANSYS Workbench

a. Exercises on Static Structural Analysis
b. Exercises on Modal Analysis
c. Advanced Named Selection
d. Remote Boundary Conditions
e. Joints, Springs and Beams
f. Virtual Topology
g. Rigid Bodies
h. Constraint Equations
i. Multistep Analysis
j. Workshops

Chapter 2: Non Linear Analysis

a. What is Nonlinear Behavior?
   - What is Nonlinear Behavior
   - Nonlinear Solution Using Linear Solvers
   - Three Types of Nonlinearities
   - Nonlinear FEA Issues
   - General Nonlinear Analysis Procedure
b. Obtaining the Solutions
   - Building a Nonlinear Model
   - Step Controls
   - Solver Controls
   - Restart Controls
   - Nonlinear Controls
   - Output Controls
   - Postprocessing
c. Geometric Non Linearities
   - Overview
   - Three Kinds of geometric Nonlinearities
   - Consistent Tangent Stiffness Matrix
   - Building the Model
   - Obtaining the Solution
   - Postprocessing
d. Plasticity
   - Background Elasticity/Plasticity
   - Yield Criteria
   - Hardening Rules
   - Material Data Input
   - Analysis Settings

- Reviewing Results
- Workshops
e. Hyperelasticity

Chapter 3: Contact and Fasteners

a. Basic concept of contact
b. Contact Formulations
c. Detection Methods
d. Stiffness and Penetration
e. Workshop 3A
f. Pinball Region
g. Symmetric vs. Asymmetric
h. Body Types in Contact
i. Postprocessing Contact Results
j. Accessing advanced Features via MAPDL
k. Bolt Pretension
l. Workshops

Chapter 4: Dynamic Analysis

a. Introductory to Dynamic Analysis
   - Definition and purpose
   - Types of Dynamic Analysis
   - Basic concepts and terminology
   - Damping
b. Modal Analysis: Overview
c. Harmonic Analysis
   - Definition & Purpose
   - Terminology & Concepts
   - Procedure
d. Transient Dynamic Analysis
   - Definition & Purpose
   - Terminology & Concepts
   - Procedure
e. Spectrum Analysis
   - Definition & Purpose
   - Terminology & Concepts
   - Procedure
   - Spectrum Analysis Guidelines
   - Random Vibration Analysis
f. Workshops

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