Grupo SSC

Soluciones Integrales

ANSYS MECHANICAL

Linear and Nonlinear Dynamics

Length: 2 Days

Overview

ANSYS Mechanical Dynamics is for engineers wishing to use ANSYS Mechanical to analyze the dynamic response of structures. The course focuses on performing modal, harmonic, flexible dynamic, and random vibration (PSD) analyses.

After completing the course, analysts should be able to analyze, in ANSYS Mechanical, the natural frequencies, mode shapes and mode participation factors of a linear elastic structure, the steady state response of a structure to sinusoidal loads of known frequency, the dynamic response of structures under the action of time-varying loads, and the random vibration of a structure using a power spectral density function (PSD).

Course Description

The training course provides students with the ability to operate ANSYS Mechanical to do dynamic analyses and how to interpret the results.

Prerequisites:

- Completion of the ANSYS Mechanical Introduction Course.

Oficina Principal
San Miguel de Allende
(415) 152 05 47
México, D.F.
(55) 2789 7294
Monterrey, N.L.
(81) 5030 8463
www. gruposSC.com

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1. Introduction to Dynamics

- Definition & Purpose
- Types of Dynamic Analysis
- Basic Concepts and Terminology
- Damping
- Workshop 1 – Flywheel

2. Modal Analysis

- Definition & Purpose
- Terminology & Concepts
- Procedure
- Workshop 2A – Plate with Hole
- Workshop 2B – Prestressed Wing

3. Harmonic Response Analysis

- Definition & Purpose
- Terminology & Concepts
- Procedure
- Workshop 3 – Fixed-Fixed Beam

4. Response Spectrum Analysis

- Definition & Purpose
- Single-point response spectrum
- Multi-point response spectrum
- Procedure
- Workshop 4 – Suspension Bridge

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5. Random Vibration Analysis

- Definition & Purpose
- Measuring Power Spectral Density
- Brief Theory Overview
- PSD curve fitting
- Procedure
- Workshop 5 – Girder Assembly

6. Transient Analysis

- Introduction
- Preliminary Modal Analysis
- Including Nonlinearities
- Part Specification and Meshing
- Nonlinear Materials
- Contact; Joints; and Springs
- Initial Conditions
- Loads; Supports; Joint Conditions
- Damping
- Analysis Settings
- Reviewing Results
- Workshop 6 – Caster

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