

Autodesk Inventor Nastran Training Course

Course Overview

Course Length: 16-Hours

- 16-Hours – 8 x 2-hour training sessions
- Remote training over MS Teams
- Sessions are recorded and download links for each session are provide for future use
- Training for up to 1-3 People
- Sessions can start within 7 days upon ordering
- Flexible sessions (i.e. consecutive or Monday, Wednesday, Friday, etc.)
- Courses are private and topics can be customised to suit
- Includes Certificate of Completion

The Autodesk Inventor Nastran training course is intended to provide practical, simulation-focused training in the Autodesk® Nastran® In-CAD environment within Autodesk® Inventor®.

This hands-on, practice-intensive course is designed for users who want to build confidence in setting up and running finite element analysis (FEA) studies on parts and assemblies using Autodesk Inventor Nastran.

You will learn how to activate and navigate the Nastran In-CAD environment, define materials and idealisations, apply constraints and loads, control meshing, run analyses, and review results so you can evaluate product behaviour under realistic operating conditions.

Topics Covered

- Activating and navigating the Autodesk Nastran In-CAD environment
- Setting up finite element analyses on part and assembly models
- Creating, editing, and assigning idealisations and materials
- Managing analyses and subcases for static and dynamic studies
- Applying constraints with the required degrees of freedom
- Creating loads that reflect real operating conditions
- Creating connector elements such as bolts, springs, rods, and rigid bodies
- Defining surface contact between interacting components
- Assigning global and local mesh settings
- Running Autodesk Nastran In-CAD analyses
- Reviewing and interpreting result plots
- Working with linear static, nonlinear, modal, frequency, transient, and random response analyses
- Understanding simulation workflow best practices for designers and analysts

Prerequisites

This course assumes that participants have a basic understanding of finite element analysis (FEA), can interpret analysis results, and understand how a model should be prepared for simulation. Experience with Autodesk Inventor or similar 3D CAD software is recommended.

Training Guide Contents

Chapter 1: Getting Started

- Lesson: Autodesk Digital Prototyping
- Lesson: Introduction to FEA
- Lesson: Introduction to Autodesk Nastran In-CAD
- Lesson: Working in Autodesk Nastran In-CAD
- Exercise: Cantilever Beam Exercise

Chapter 2: Working with the Default Analysis

- Lesson: Analysis & Subcases
- Lesson: Idealizations & Materials
- Lesson: Constraints & Loads
- Lesson: Connectors
- Exercise: Cast Lever Boundary Conditions I
- Exercise: Cast Lever Boundary Conditions II

Chapter 3: Working with the Mesh and Result Plots

- Lesson: Meshing Basics
- Lesson: Generating & Reviewing the Mesh
- Lesson: Customizing the Mesh
- Lesson: Loading Analysis Results
- Lesson: Visualizing Result Plots
- Lesson: Visualizing XY Plot Results
- Exercise: Refining the Mesh
- Exercise: Working with Line Elements

Chapter 4: Surface Contacts

- Lesson: Surface Contacts
- Exercise: Contacts & Symmetry in an Assembly Model

Chapter 5: Working with Composites

- Lesson: Working with Composites
- Exercise: Using Composite Materials in a Bike Frame

Chapter 6: Nonlinear Static Analysis

- Lesson: Basics of a Nonlinear Analysis
- Lesson: Creating a Nonlinear Static Analysis
- Exercise: Flat Walled Tank

Chapter 7: Nonlinear Materials

- Lesson: Working with Nonlinear Materials
- Exercise: Flexural Test Fixture

Chapter 8: Nonlinear Transient Response Analysis

- Lesson: Creating a Nonlinear Transient Response Analysis
- Exercise: Ball Impact

Chapter 9: Normal Modes Analysis

- Lesson: Basics of a Dynamic Analysis
- Lesson: Creating a Normal Modes Analysis
- Exercise: Muffler I - Determining Natural Frequencies
- Exercise: Muffler II - Modal Avoidance

Chapter 10: Frequency Response Analysis

- Lesson: Creating a Frequency Response Analysis
- Exercise: Muffler III - Frequency Response

Chapter 11: Transient Response Analysis

- Lesson: Creating Direct & Modal Transient Response Analysis
- Exercise: Wing

Chapter 12: Random Response Analysis

- Lesson: Creating a Random Response Analysis
- Exercise: Muffler IV - Random Response

Chapter 13: Shock/Response Spectrum Analysis

- Lesson: Creating a Shock/Response Spectrum Analysis
- Exercise: Multi-Story Building