



IFS-Academy

Training for the future!!!

ANSYS Advanced Contact Analysis Course Curriculum

Chapter 1: Introduction: Contact Overview

- a. Typical Applications
- b. Contact Classifications
- c. Review General Procedures
- d. Contact Manager
- e. Advanced Options

Chapter 2: Contact Properties - Basic Options

- a. Algorithms
- b. Stiffness
- c. Workshop – Contact Stiffness
- d. Penetration Tolerance
- e. Pinball Region
- f. Surface Behaviors
- g. Workshop – Surface Behaviors
- h. Contact Detection
- i. Workshop 2C – Edge Contact

Chapter 3: Friction

- a. What is Friction?
- b. Coulomb Model
- c. Coefficient of Friction
- d. Defining the Parameters
- e. Special Considerations
- f. Workshop – Constant Coefficient
- g. Workshop – Using Taumax
- h. Workshop – Dynamic Coefficient

Chapter 4: Advanced Rigid Targets

- a. Pilot Nodes
- b. Constraining a Rigid Target
- c. Complex Target Surfaces
- d. Creating Elements w/o the Wizard

Chapter 5: Contact Properties - Adv. Options

- a. Initial Interference
- b. Workshop – Initial Interference
- c. Dealing with Rigid Body Motion
- d. Workshop – Rigid Body – Close Gap
- e. Workshop – Rigid Body – PMIN & PMAX
- f. Asymmetric vs Symmetric
- g. Miscellaneous Adjustments
- h. Workshop – Troubleshooting a large model
- i. Troubleshooting
- j. Workshop – General Debugging Techniques
- k. Workshop – Troubleshooting Shell Contact

Chapter 6: Multi-Point Constraints (MPC)

- a. Background
- b. Solid-to-Solid MPC Bonded Contact
- c. Shell-to-Shell MPC Bonded Contact
- d. Shell-to-Solid MPC Bonded Contact
- e. Beam to Shell/Solid MPC Contact
- f. MPC Surface Based Constraints
- g. General Notes
- h. Workshop A – MPC Beam to Shell Contact
- i. Workshop B – MPC Surface Based Constraints

Chapter 7: 3D Line-to-Line Elements

- a. Theory
- b. Application

Chapter 8: Node-to-Node Elements

- a. Workshop – Node-to-Node Contact

Chapter 9: Contact Applications in Multiphysics

- a. Overview
- b. Contact with Coupled-Field Elements
- c. Thermal Contact
- d. Electric Contact
- e. Magnetic Contact
- f. Units
- g. Workshop A – Contact in Multiphysics Spot Weld

Chapter 10: Bolt Pretension

- a. PRETS179 Element
- b. Typical Procedure
- c. Workshop – Bolt Pretension

Chapter 11: Spot Welds

- a. Spot Weld Features
- b. Spot Weld Procedure
- c. Spot Weld Projection
- d. Listing and Deleting Spot Welds
- e. Listing Results for Spot Welds
- f. Additional Considerations
- g. Workshop A – Creating Spot Welds

Chapter 12: Gasket Material

- a. Background on Gaskets
- b. Interface Elements
- c. Gasket Material
- d. Solving Gasket Models

Chapter 13: Cohesive Zone Modeling

- a. Introduction
- b. Interface Elements
- c. Generation of INTER20x Elements
- d. Traction-Separation Law
- e. Post processing

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Phone: +91-20-6400 7296, Mob. No.: +91-99224 40102, Email: training@infinitesolutionsindia.com,

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