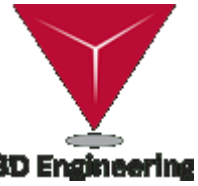




राष्ट्रीय प्रौद्योगिकी संस्थान वारंगल
National Institute of Technology Warangal
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TEST & OPTIMISATION LAB

NITW SIEMENS CENTRE OF EXCELLENCE, NIT WARANGAL

Course Name: Simcenter 3D (Basic Course)

Course Duration: 40 Hrs.

Course overview:

- Intended Audience:
 - Design engineers and analysts who want to learn the details of how to perform finite element analysis using this software.
- Prerequisites
 - Education: B.E/B.Tech. 2nd year completed in any one of the following streams.
 - Software: NX Basics/Designing Parts in NX
- Course objectives
 - Introduce Finite Element Analysis (FEA)
 - Discuss in detail about the tools & features available in Simcenter 3D in engineering problems
 - Become familiar with Simcenter 3D
 - After successfully completing this course :
 - Student will know the basics of software operation, Finite Element Analysis.
- **Course contents**
 1. Basics of Finite Element Analysis (FEA)
 2. Introduction to Simcenter 3D
 - 2.1. GUI
 - 2.2. Opening a new file
 - 2.3. Opening a saved file
 - 2.4. Resetting dialog box memory
 - 2.5. Creating a model
 - 2.6. Creating new FEA and simulation
 - 2.7. Simulation Navigator
 - 2.8. Post Processing Navigator
 3. Modelling the Geometry with Simcenter 3D
 - 3.1. Datum plane
 - 3.2. Part & Assembly Navigator
 - 3.3. Sketch tools
 - 3.3.1. Curve tools
 - 3.3.2. Edit tools
 - 3.3.3. Dimensioning
 - 3.4. Extrude
 - 3.5. Revolve
 - 3.6. Hole
 - 3.7. Unite
 - 3.8. Subtract
 - 3.9. Edge blend & Chamfer
 - 3.10. Draft



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- 3.11. Shell
- 3.12. Pattern Feature
- 3.13. Mirror Feature
- 3.14. Synchronous modelling

- 4. Pre-processing with Simcenter 3D
 - 4.1. Meshing
 - 4.1.1. Mid-surfacing
 - 4.1.2. Mesh collectors
 - 4.1.3. 2D mesh
 - 4.1.4. Selection filters
 - 4.1.5. Assigning element thickness
 - 4.1.6. 3D mesh
 - 4.1.7. Copy & translate elements
 - 4.1.8. Field
 - 4.1.9. Extrude & Revolve
 - 4.1.10. Reflect
 - 4.1.11. Check all
 - 4.1.12. 1D Mesh
 - 4.1.13. Connections
 - 4.1.14. Regions
 - 4.2. Material definition
 - 4.2.1. Defining the new material
 - 4.2.2. Defining the non-linear material
 - 4.3. Boundary conditions
 - 4.3.1. Load type
 - 4.3.2. Constraint type
 - 4.3.3. Simulation object type
 - 4.3.4. Defining a time-dependent boundary condition

- 5. Post-Processing with Simcenter 3D
 - 5.1. Edit post view
 - 5.1.1. Streamline plot
 - 5.1.2. Seeds
 - 5.2. Cutting plane
 - 5.3. Arrow plot
 - 5.4. Contour
 - 5.5. Animating the result
 - 5.6. Identify results
 - 5.7. Create graph
 - 5.8. New annotations
 - 5.9. Deformation

- 6. Response Dynamics using Simcenter 3D
- 7. Topology optimization using Simcenter 3D
- 8. Thermal analysis using Simcenter 3D
- 9. Analysing fluid flow with Simcenter 3D
- 10. Coupled thermal and flow analysis using Simcenter 3D
- 11. Orbital radiation analysis using Simcenter 3D.