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Computer-Aided Design and Analysis

SolidWorks

Interface and Basic Sketch Tools Part Design and Features Assembly and Mating Technical Drawing and Dimensioning Surface Modeling Sheet Metal and Weldments SolidWorks Simulation (Intro to Static Analysis)

MATLAB & Simulink

MATLAB Basic Syntax, Vectors, and Matrices Functions, Loops, and Scripting Data Visualization (2D and 3D Plotting) Numerical Methods (Derivatives, Integrals, ODEs) System Modeling with Simulink Block Diagrams Control Systems Design (Control System Toolbox)

Computational Fluid Dynamics (CFD)

Introduction to CFD and Navier-Stokes Equations Meshing Strategies and Quality Criteria Turbulence Models (k-epsilon, k-omega, LES) Ansys Fluent / CFX Setup and Solution Stages

Finite Element Analysis (FEA)

Finite Element Method (FEM) Fundamentals Linear and Non-linear Static Analyses Dynamic, Vibration, and Modal Analyses Fatigue and Life Analysis Using Ansys Mechanical and Boundary Conditions

Artificial Intelligence Applications (AI)

Artificial Intelligence and Machine Learning in Engineering Big Data and Data Processing Neural Networks and Design Optimization Predictive Maintenance

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