**Course Name** : *Advanced Simulation Process*

**Course Duration** : 24 Hrs.

**Course Overview**

- **Course Description**
  - Advanced Simulation Processes and Solutions introduces the finite element modeling and analysis tool integrated in NX.
- **Intended Audience**
  - It is intended for design engineers and analysts who want to learn the details of how to do finite element analysis on NX models.
- **Prerequisites**
  - *Education*: Diploma completed or Degree 2nd year completed in any one of following Streams.
    - Aeronautical, Automobile, Civil, Industrial, Marine, Mechanical, Mechatronics, Metallurgy, Production and Manufacturing Engineering.
  - *Software*:
    - The Essentials for NX Designers class, or in self-paced training: Essentials – NX Basics and the CAD Foundation courses.
    - Working knowledge of NX Modeling. Basic understanding of finite element analysis principles.
- **Course Objective**
  - Objective of this course is to covers the details of the FEA processes from preparing a model, meshing, applying boundary conditions, solving, and post-processing the results, and covers applications of various analysis types, contact analysis, durability, and optimization.
- **Course Contents**
  - Analyzing a model
    - Introduction to Advanced Simulation
    - Working with Advanced Simulation
    - Selecting entities
    - Basic meshing techniques
    - Boundary conditions
    - Boundary condition techniques
    - Using fields in boundary conditions
    - Solving
    - Post-processing
    - Reports
  - Preparing the geometry
    - Geometry idealization
    - Geometry abstraction
    - Synchronous modeling
    - Geometry repair

- Mesh collectors
- Material and physical properties
- Element size and mesh density
- Beam modeling
- Connecting meshes
- Bolt modeling and pre-loads
- 3D swept meshing
- Manual meshing
- Mesh quality

- Advanced Simulation solutions
  - Modal analysis
  - Response Simulation
  - Thermal analysis
  - Buckling analysis
  - Contact and gluing
  - Symmetry
  - Assembly FEM
  - Nonlinear static analysis
  - Geometry optimization
  - Superelements
  - Flexible body analysis