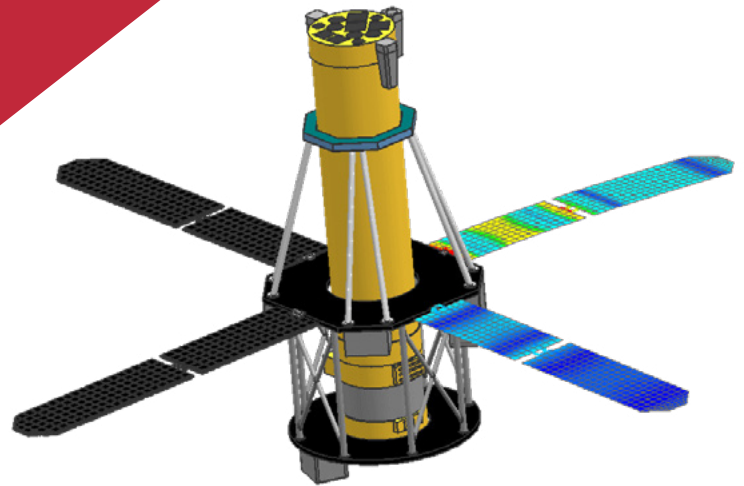


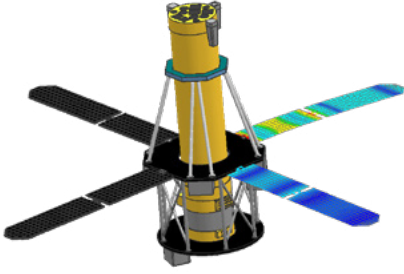
**NX & Simcenter 3D**

**WHITEPAPER**

Recommended  
Learning Advantage  
Lessons for NX and  
Simcenter 3D



## Recommended Learning Advantage Lessons for NX and Simcenter 3D



**Software:**  
NX  
Simcenter 3D

### Overview

Learning Advantage is an easy-to-use online portal that provides cost-effective and time-efficient training in Siemens PLM Software solutions. This whitepaper offers a list of recommended lessons to introduce CAD and CAE using NX and Simcenter 3D.

*This whitepaper is part of a series of free Siemens PLM Software training resources provided by ATA. For more whitepapers, tutorials, videos, and macros, visit ATA's PLM Software website:  
<http://www.ata-plmsoftware.com/resources>.*

## Recommended Learning Advantage Lessons for NX and Simcenter 3D

### About Learning Advantage

Learning Advantage is a powerful and convenient e-Learning portal that helps users gain skills and knowledge of Siemens PLM Software solutions through a variety of self-paced courses, interactive activities with supporting part downloads, and assessments. It includes management tools that allow companies to assign and track customized learning progress, and training can be completed as a traditional online course or used to target individual topics as needed.

Course development teams work closely with the software developers, ensuring that training and assessments capture the intended product usage and industry best practices. Courses are available for all experience levels, and annual memberships include access to new course materials that are developed throughout the year as software is updated and new versions are released.

Because Learning Advantage is web-based, it is accessible from anywhere with a standard internet browser, and no local software installation is needed. The platform has a simple user interface with single-click course launch, and text search allows users to quickly find information.

Memberships are available for both individuals and corporations. For more information, visit <http://training.plm.automation.siemens.com/mytraining/index.cfm>

### Suggested Lessons

The following list includes recommended Learning Advantage lessons that provide an introduction to CAD and CAE topics in NX and Simcenter 3D. All titles refer to courses available under the category of Self-Paced Courses on the Siemens Learning Advantage database and are accessible with an active membership. The assessments can be treated as a self-review of the material.

#### 1 Category NX – Essentials

- NX User Interface

  - NX User Interface

#### 2 Category NX – CAD Foundation

- Sketching

  - Advanced sketching

  - Sketching assessment

- Feature Modeling - Fundamentals

  - Overview of modeling

  - Defining the initial shape of a part

  - Creating design features

  - Combining bodies

## Recommended Learning Advantage Lessons for NX and Simcenter 3D

- Sweeping geometry
- Editing and organizing features
- Copying features
- Simplifying geometry for downstream applications
- Adding detail features
- Synchronous Modeling
  - Introduction to synchronous modeling
  - Synchronous modeling assessment
- 3 Category NX – CAE Design Simulation**
  - Design Simulation Processes
    - Design Simulation and the finite element method
    - Model preparation with Synchronous Modeling – Design Simulation
    - Meshing – Design Simulation
    - Loads and constraints – Design Simulation
    - Solving – Design Simulation
    - Introduction to post-processing
  - Design Simulation Solutions
    - Linear static analysis
    - Modal analysis
    - Thermal (heat transfer) analysis
    - Linear buckling analysis
- 4 Category Simcenter – Pre/Post**
  - Fundamental Workflows
    - Introduction to Simcenter Pre/Post
    - Working with Simcenter Pre/Post
    - Meshing
    - Boundary conditions
    - Solutions and solving
    - Post-processing
    - Advanced Simulation fundamentals workflows assessment
  - Geometry Preparation
    - Model preparation with Synchronous Modeling
    - Midsurfaces
    - Working with polygon geometry
    - Repairing imported geometry for solid meshing
    - Geometry preparation assessment

## Recommended Learning Advantage Lessons for NX and Simcenter 3D

### FE Modeling with Solid Elements

- Tetrahedral meshing techniques

- Controlling local mesh density

- Hexahedral meshing techniques

- Example: Generating a hexahedral mesh on a bracket

- FE modeling with solid elements assessment

### FE Modeling with Shell Elements

- 2D meshing

- Example: Generating a shell mesh on a welded structure

- Example: Generating a shell mesh on a strut

- Mesh quality and repair

- Manual meshing

- Mesh repair

- FE modeling with shell elements assessment

### FE Modeling with Beam Elements

- Beam modeling

- Beam post-processing

- FE modeling with beam elements assessment

### Analysis Solutions

- Linear static analysis

- Model analysis

### Analysis Techniques

- Connections

- Coordinate systems

- Post-processing techniques

### Large models and system analysis

- CAE file management

- Assembly FEMs

ATA is proud to be a value-added reseller of Siemens PLM Software. In addition to the Learning Center courses above, you can visit [www.ata-plmsoftware.com](http://www.ata-plmsoftware.com) for a variety of free resources.

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