

PolyWorks | Modeler™ basic polygonal editing, parametric sketching, and NURBS surfacing

Objective

The objective of this 3-day training is to enable metrology operators, technicians, engineers, and designers, who have little or no knowledge of the PolyWorks Metrology Suite, to reverse engineer parts using tools found in PolyWorks | Modeler™. More specifically, it covers the key concepts of basic polygonal model editing, parametric sketching, and NURBS surfacing.

Prerequisites

- Trainees must have basic knowledge of metrology.
- Trainees must have basic computer skills (Windows operating systems).

Outline

- Manage files and navigate through the PolyWorks® interface
- Obtain part data and position the polygonal model
- Edit the polygonal model
- Model prismatic shapes using sketching tools
- Model freeform shapes using NURBS surfacing tools

Content

Manage files and navigate through the PolyWorks® interface

- Navigate through the PolyWorks Workspace manager interface
- Create and save a workspace
- Navigate through the PolyWorks | Inspector and PolyWorks | Modeler interfaces
- Create and save PolyWorks | Inspector and PolyWorks | Modeler projects
- Define the steps of a typical reverse-engineering workflow

Obtain part data and position the polygonal model

- Connect to a device
- Scan a polygonal model using quality metrics
- Acquire data in different device positions
- Create a unified polygonal model
- Extract key features on the polygonal model
- Position the polygonal model with respect to the coordinate system standard axes

Edit the polygonal model

- Transfer objects between modules
- Smooth polygonal model vertices
- Reconstruct areas of the polygonal model
- Fill holes
 - Automatically and interactively
- Optimize the curvature
- Reduce or subdivide triangles
- Create, edit, and insert curves into the polygonal model
 - Standard
 - Boundary
 - Fillet Tangent & Edge

Model prismatic shapes using sketching tools

- Create a sketch from the outline of a polygonal model
- Create and edit sketch entities
 - Add dimensions
 - Add relations
- Export sketches for parametric and associative downstream modeling

Model freeform shapes using NURBS surfacing tools

- Create a network of curves that define NURBS patches
- Fit NURBS patches to the underlying polygonal model
 - Review fitting errors
 - Adjust fitting parameters
- Create a NURBS model from the fitted NURBS patches
- Export the fitted NURBS patches or the NURBS model for downstream modeling