Project Curve

Path: **Curve tab > Derived Curve group > Project Curve**

Objectives

- Project curves, points, or sketches onto faces and planes.

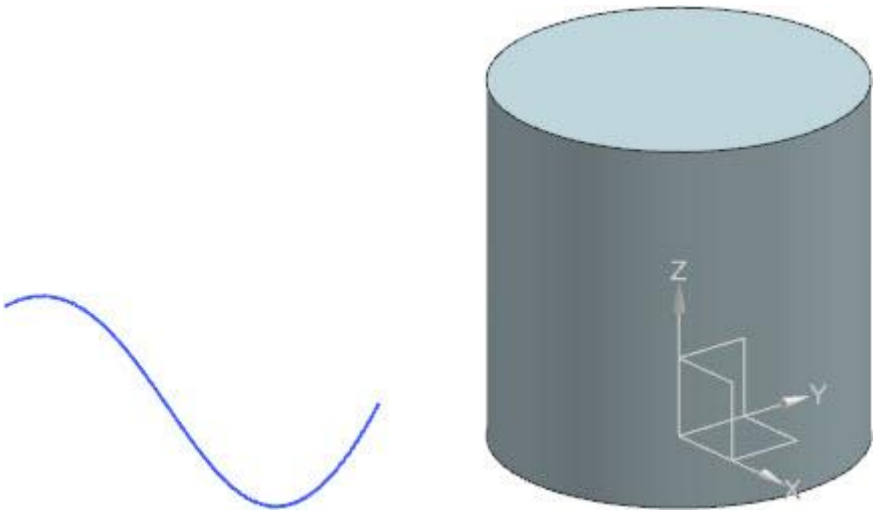
Prerequisites

- **File tab > Start > Modeling**

Projecting Curves to a Surface

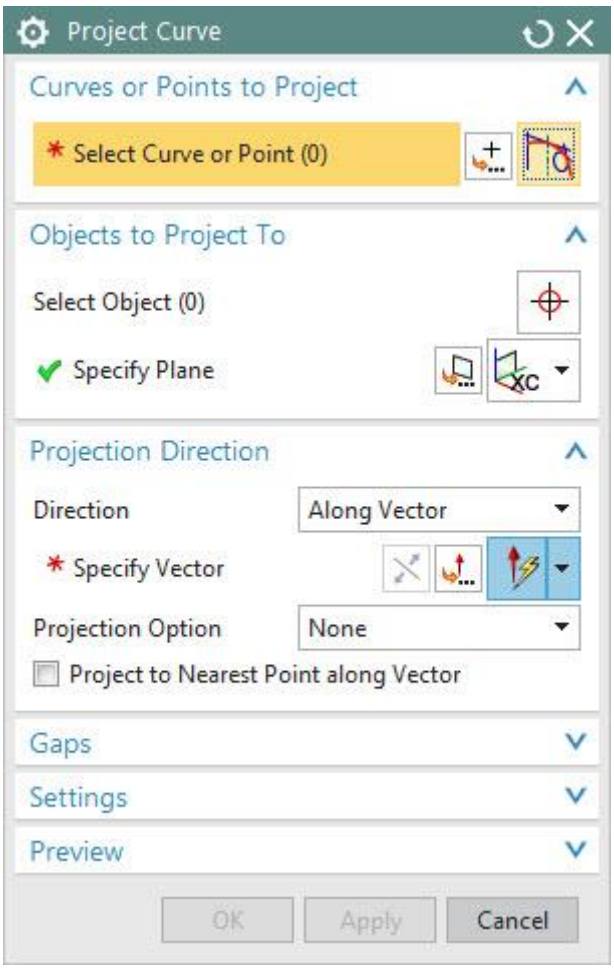
Step 1:

Open the part file Project_Curve_model.prt**.**



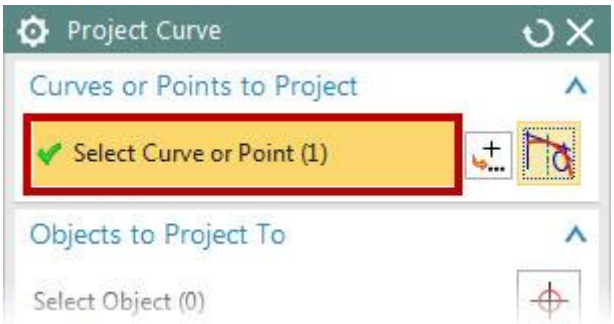
Step 2:

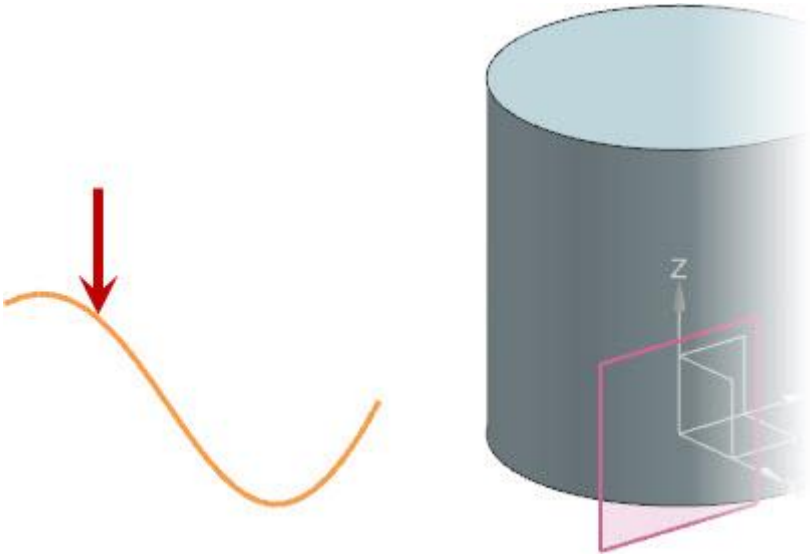
Select **Curve tab > Derived Curve group > Project Curve** to display the **Project Curve** dialog.



Step 3:

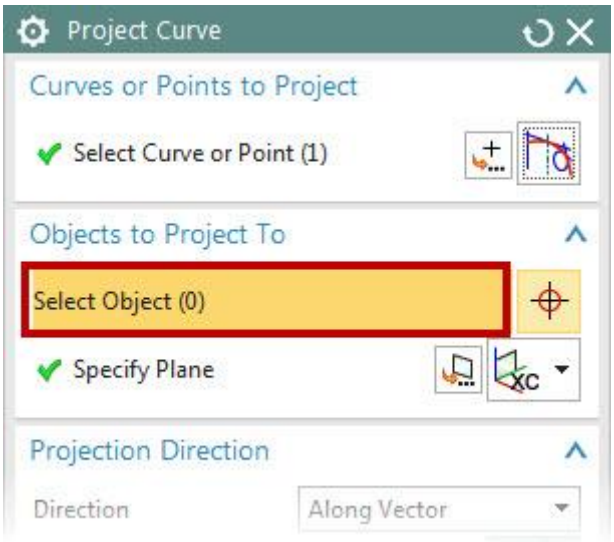
The **Select Curve or Point** selection step should be highlighted in the **Curves or Points to Project** pane. Pick the indicated curve in the Graphics window.





Step 4:

Select the **Select Object** selection step in the **Objects to Project To** pane.

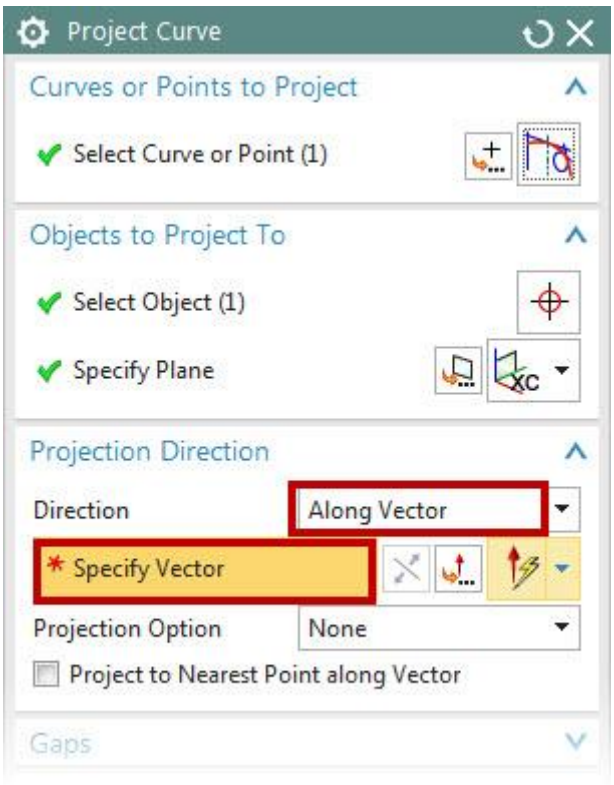


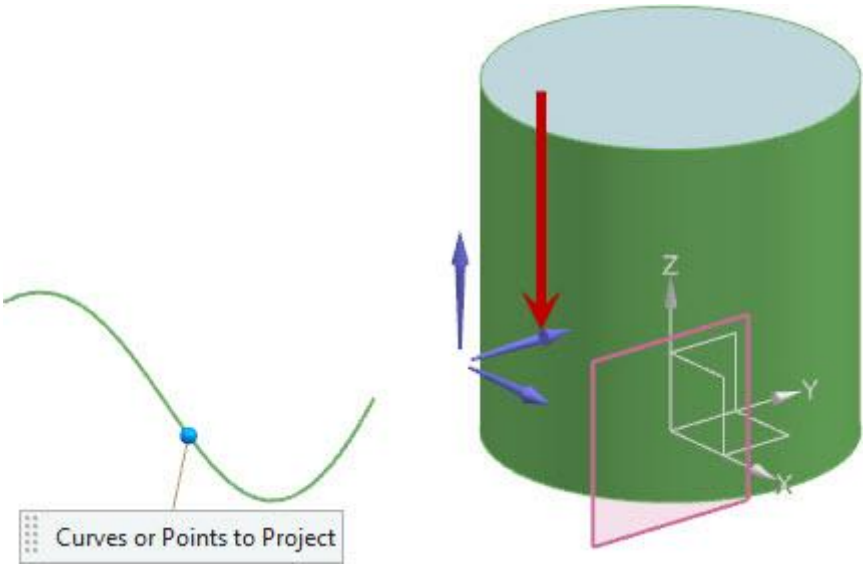
Step 5:

In the Graphics window, pick the indicated face on which to project the curve.

Step 6:

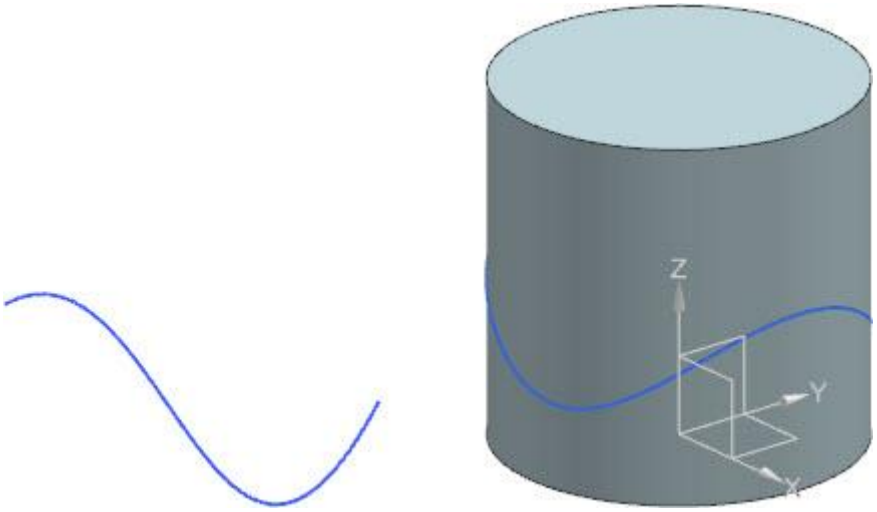
Set the **Direction** drop-down to **Along Vector** and then with the **Specify Vector** selection step highlighted, pick the Y-axis as indicated.





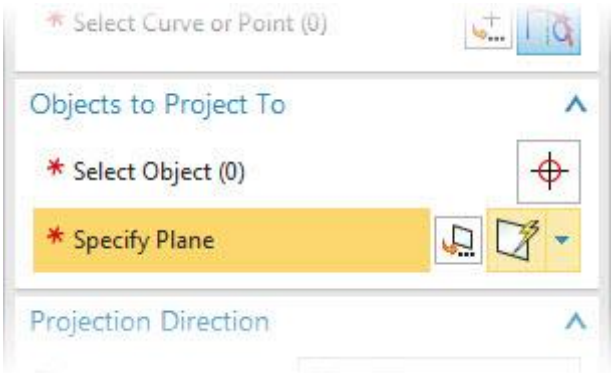
Step 7:
Activate **Associative** under **Settings** pane.
Step 8:

Click **OK** create the projected curve feature.



Objects to Project To

Selecting a selection step in this pane filters the type of geometry you can pick for both selection steps. The filter settings vary depending on the selection step.



Select Object

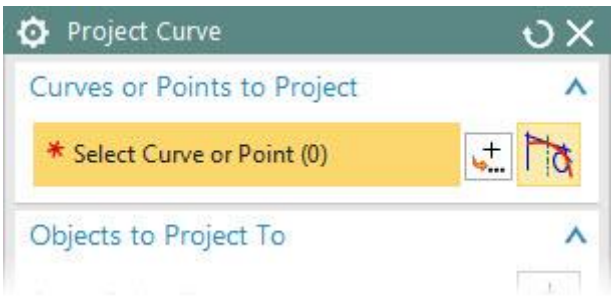
Simply select the object on which to project the initially selected object(s).

Specify Plane

Use the tools to establish a projection plane.

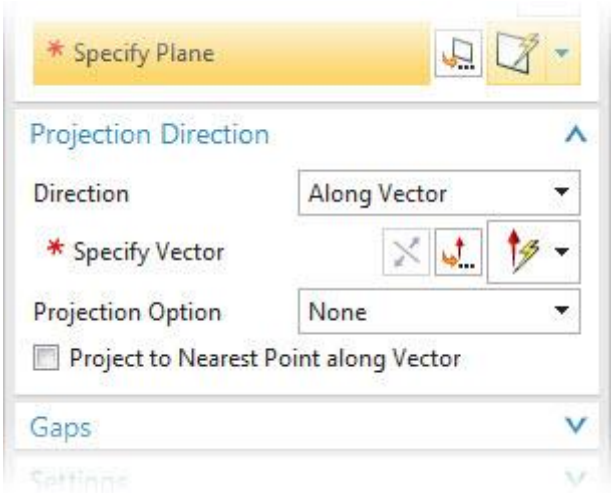
Curves or Points to Project

This pane contains a single selection step to pick the object(s) to project.



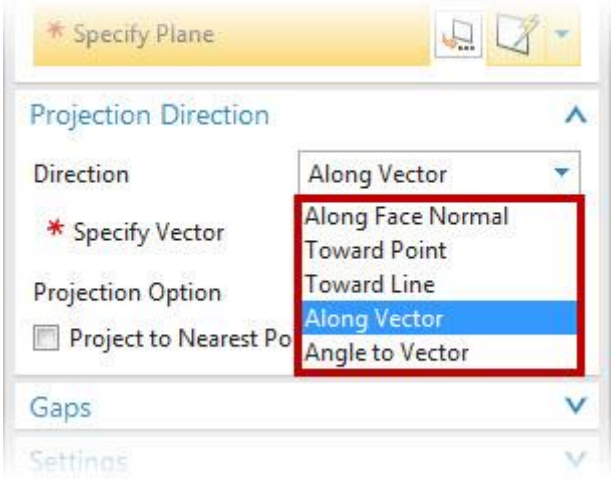
Projection Direction

Select a direction method from the drop-down in this pane, and depending upon the method selected, choose additional options to set the desired direction.



Direction

Choose the setting needed from this drop-down to define the projection direction.



Along Face Normal defines the projection direction as normal to the projection face.

Toward Point projects the curves along vectors aiming at an existing point. After selecting this method, you must pick an existing point in the Graphics window.

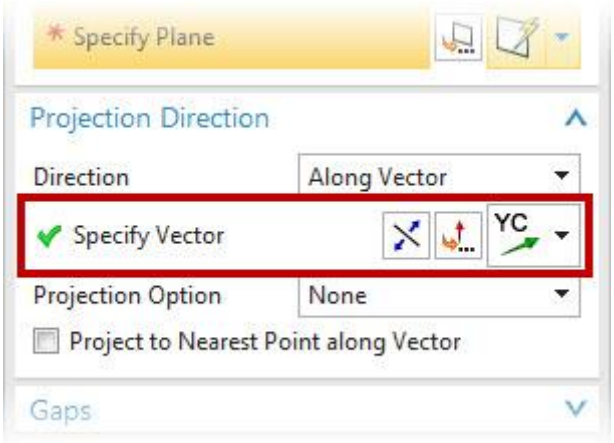
Toward Line projects the curves along vectors that are perpendicular to a datum axis or an existing line. After selecting this method, you must pick an existing line in the Graphics window.

Along Vector projects the curves along vectors defined by the user.

Angle to Vector projects the curves at an angle from a defined vector. You can specify a positive or negative angle value. The geometry can project to either side of the vector based on the centroid of the particular geometry used. You cannot project points with this method.

Specify Vector

This selection step is only available for the **Along Vector** or **Angle to Vector** direction options. It offers numerous methods to specify a vector, including **Vector Dialog**.

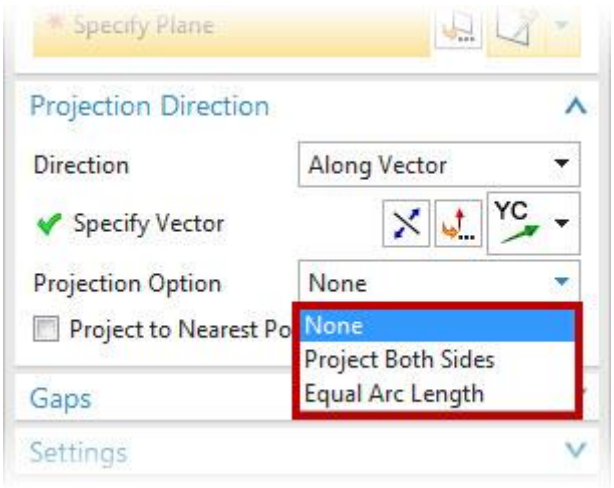


Reverse Direction

Clicking this flips the current direction 180 degrees.

Projection Option

Three options exist in this drop-down to assist is projecting the curves. This drop-down is only available when the **Along Vector** direction is being used.



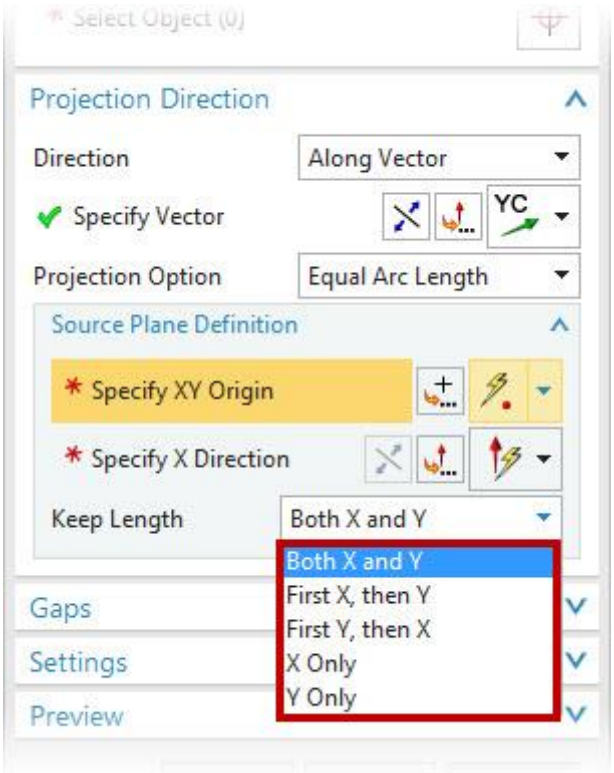
None uses the direction defined.

Project Both Sides projects the curves along the vector direction, and its opposite direction.

Equal Arc Length activates a **Source Plane Definition** sub-pane. Curves are projected from an X-Y coordinate system to the U-V isocurve coordinate on the projection surface. You are able to maintain the original length with the projected curve based on the **Keep Length** setting.

Keep Length

Five options are available in this drop-down to help you define how the curve is projected.



Both X and Y – U is the arclength distance of X mapped along the U-Isocurve of the face, and V is the arclength distance of Y mapped along the V-Isocurve of the face.

First X, then Y – The arc length distance of X mapped along the U-Isocurve is calculated first as U, and then the arclength distance of Y mapped along the V-Isocurve is calculated as V.

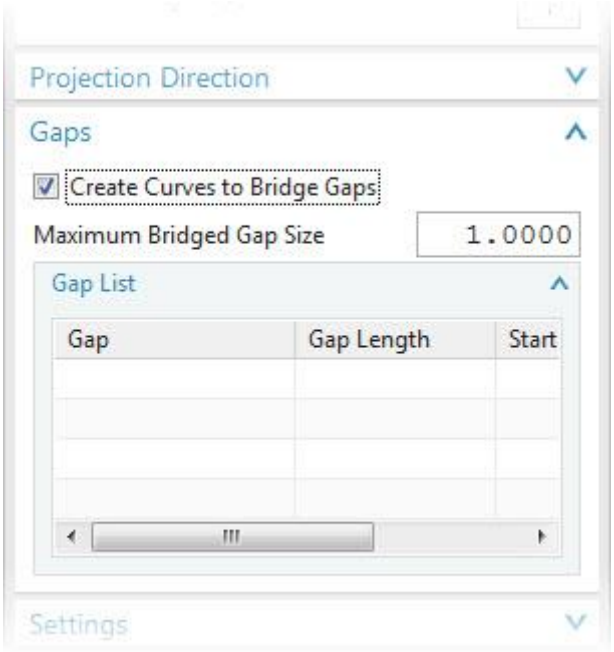
First Y, then X – The arclength distance of Y mapped along the V-Isocurve is calculated first as V, and then the arclength distance of X mapped along the U-Isocurve is calculated as U.

X Only – U is an arclength distance of X mapped along the U-Isocurve and V is defined as the distance of Y to the reference point, measured in the Y-direction.

Y Only – V is an arc length distance of Y mapped along the V-Isocurve, and U is defined as the distance of X to the reference point, measured in the X-direction.

Gaps

Expand the dialog to access this pane which contains an option that helps bridge small gaps between any two segments in projection curves and joins the segments as a single curve.



Create Curves to Bridge Gaps

Gaps are bridged only when both the following conditions are met; the gap distance is less than what is defined in **Maximum Bridged Gap Size** and when the gap distance is larger than the specified modeling tolerance.

Maximum Bridged Gap Size

This text box becomes available when the **Create Curves to Bridge Gaps** check box is selected. Specifies the maximum size allowed between gaps. Gaps that are smaller than this value are bridged when the **Create Curves to Bridge Gaps** check box is active.

Gap List

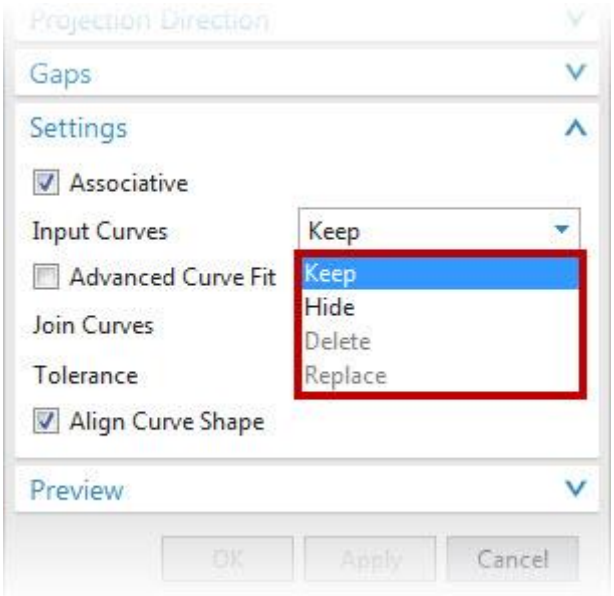
Lists the following information Number of gaps, bridged gaps, non-bridged gaps, Length of the non-bridged gaps and the start and end point coordinate information for each gap. When a gap is selected in the list, the corresponding gap segments are highlighted in the graphics window.

Settings

Expand the dialog to access this pane. Here you determine the actions performed on the input curves, the new objects, and if you would like the feature to be associative. You can also set the tolerance to a value different from that of the **Modeling Preferences**.

Associative
If this is active, a feature is created.
Input Curves

Four settings exist for this drop-down, and if **Associative** is active, only two, **Keep** and **Hide**, will be available.



Keep maintains the visibility of the input objects.

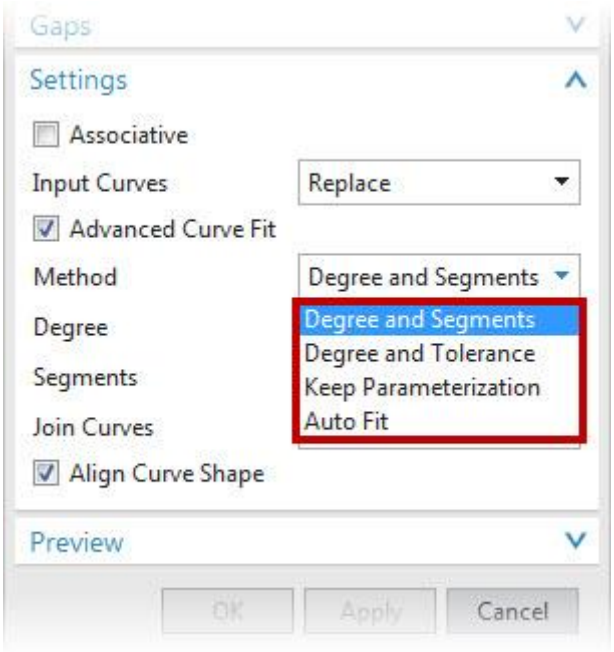
Hide hides the input objects

Delete, available only for a non-associative operation, deletes the input objects.

Replace is also only for non-associative operations and replaces the input objects with the new curves.

Advanced Curve Fit

Activate this to display the **Method** drop-down, which determines how to fit the project curve.



Degree and Segments specifies the degree and segment of output curves, providing explicit control on the parameterization of output curves.

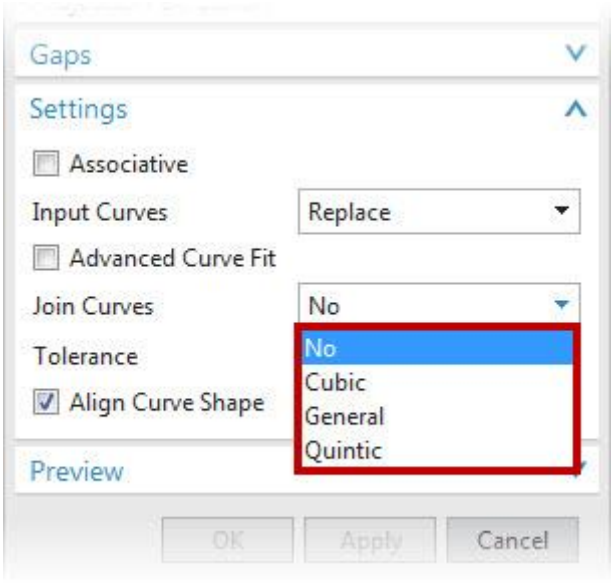
Degree and Tolerance specifies the maximum degree and the tolerance to control the parameterization of the output curve.

Keep Parameterization inherits the degree, segments, pole structure and the knot structure from the input curve (or, in the case of Intersection Curve, the input surface) and applies it to the output curve.

Auto Fit specifies the minimum degree, the maximum degree, the maximum number of segments and tolerance to control the parameterization of the output curve.

Join Curves

This drop-down determines whether to join the curves, and how to join them.



No means "no joining of curves." Anything projected across multiple faces will result in multiple objects.

Cubic joins the projected curves as a polynomial spline.

General joins the projected curves as a general spline.

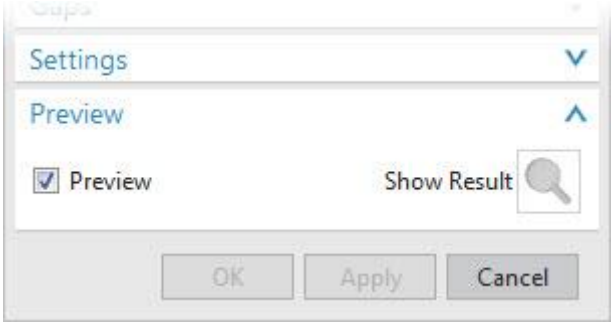
Quintic joins the projected curves as a five-degree spline.

Align Curve Shape

Activating this option applies the pole distribution of the input curve to the projected curve regardless of the curve fitting method used.

Preview

You can use the option in this pane to preview the result based on the current settings.



Note You can also edit an associatively projected curve by selecting Home tab > Edit Curve group > Edit Curve Parameters and selecting the Projected Curve feature from the Graphics window. Or simply double click on the feature.

Note You may also project points onto a face, sheet, or plane using Associative. The Associative option creates points that update with changes to the face or sheet on which they are projected.