

Advanced CAD Week 4: Advanced Inventor Techniques

Rohawks 3419 -- Celina, Nathan, Lili -- 2019-2020

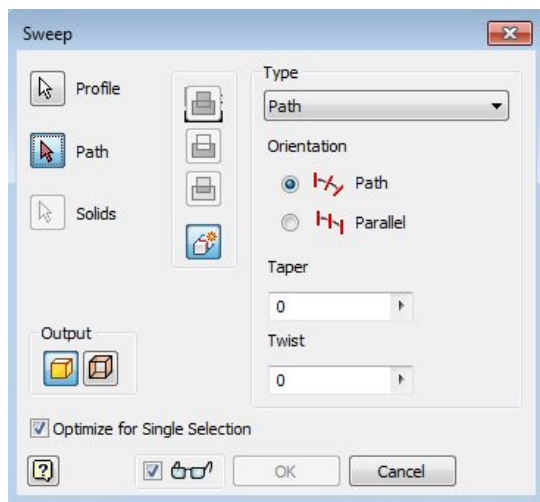


Lesson Goals

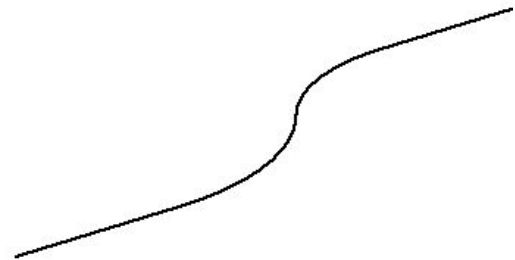
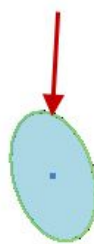
- Show students the tools they will need to create specialized parts and give them time to practice using them.
- Explain some of the most common applications/uses for each part.

Lesson Plan

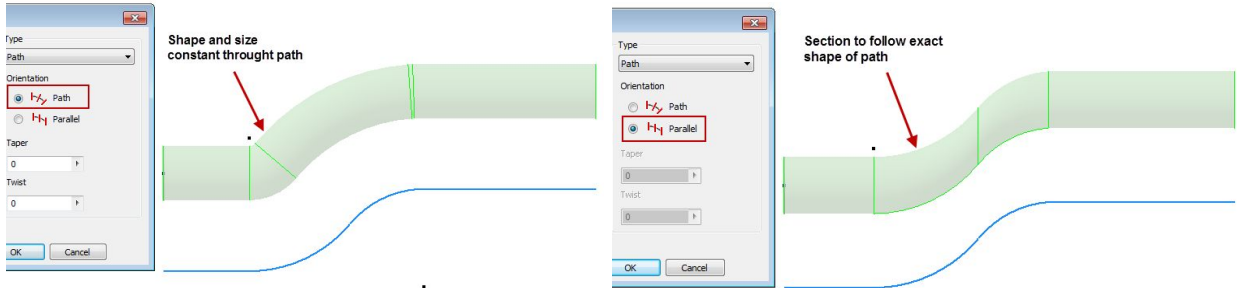
- Pre-lesson setup
 - No downloads or accounts to be created for this lesson - could just ask for some extra practice.
- Sweep
 - The Sweep tool can be used to extrude a cross-section along a curved path, whereas the extrude tool can only do it in a straight line.



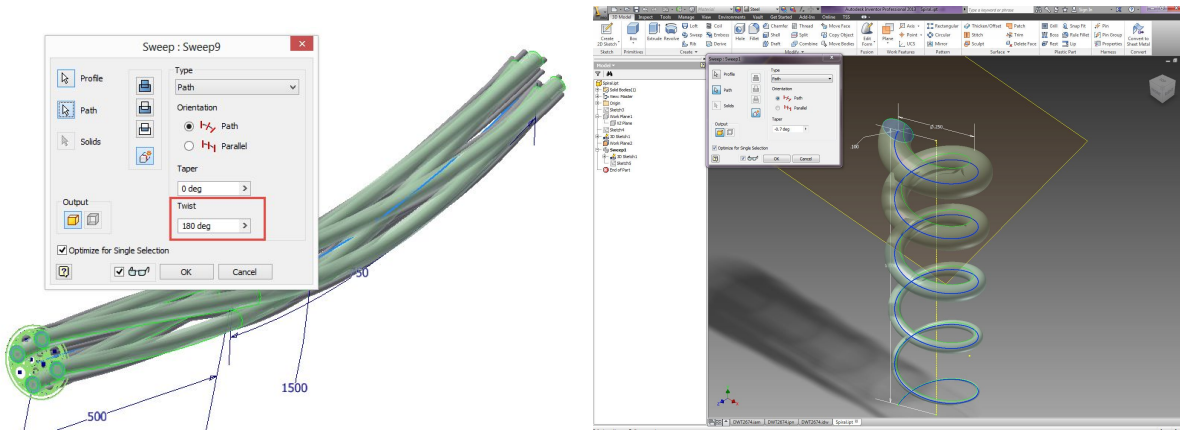
Section selected automatically



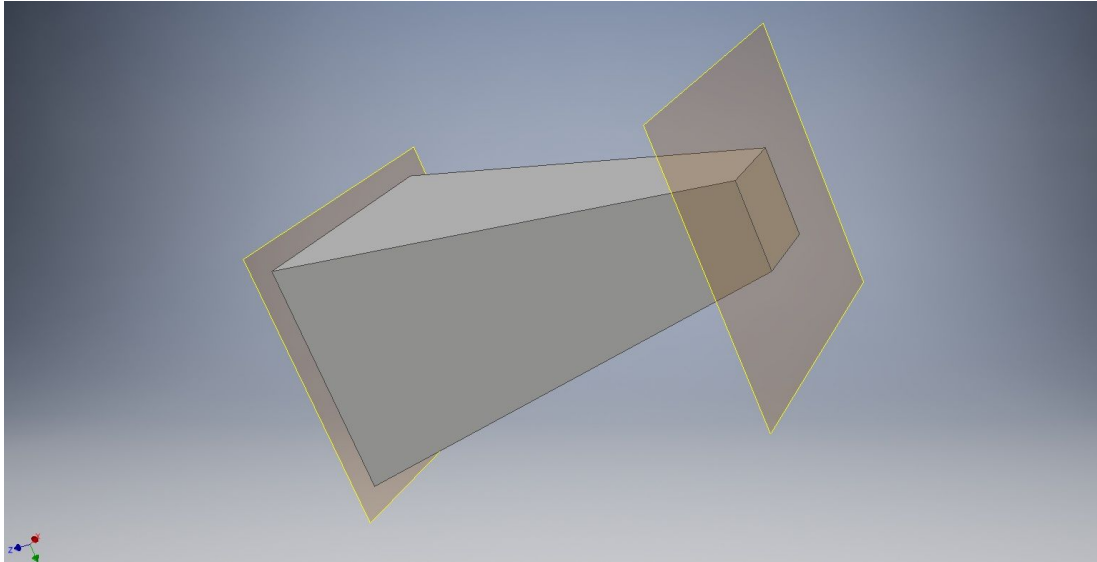
- The Orientation options determine how exactly the cross-section follows the line; path makes its orientation change, while parallel will keep it facing the same direction along the whole sweep.



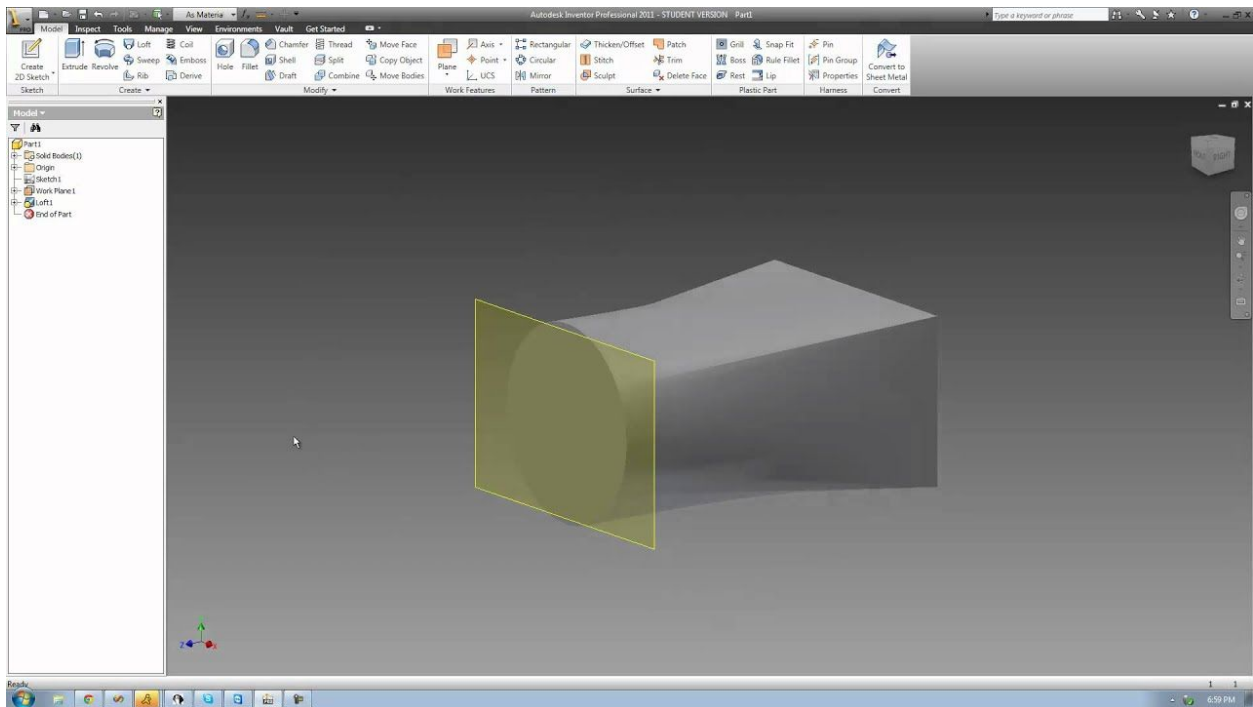
- The twist input is in degrees of a circle; it specifies how many times the shape should be rotated about the axis. 360 would be 1 full rotation.
- The taper input is also in degrees; it specifies the rate at which the cross-section should get wider/narrower as it “moves” along the guiding line.



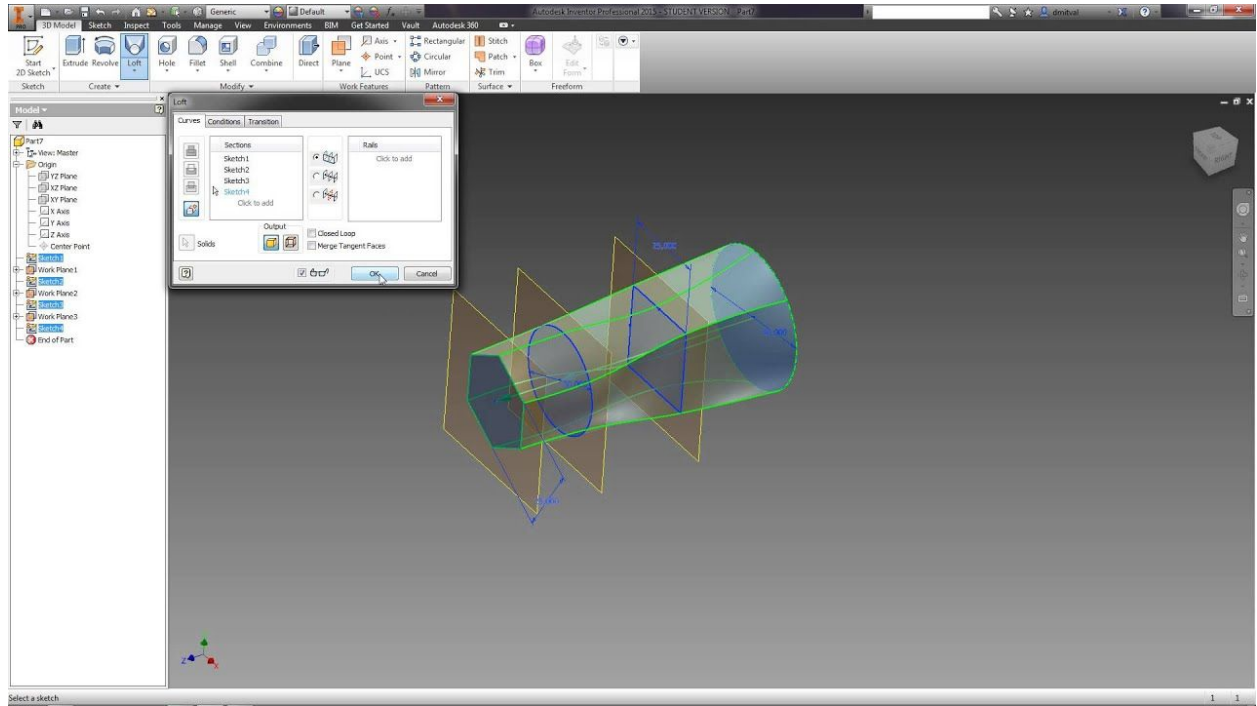
- Loft
 - The loft tool is similar to Sweep in purpose. It involves selecting two or more 2D sketches and connecting them.
 - Loft wouldn't often be used for sheet metal, but it is great for objects such as mounts.



- The cross-sections of the two end planes of the loft do **not** have to be geometrically similar; one can loft a square to a rectangle, or even a circle, for example.



- This property makes the loft tool more versatile than the Sweep tool; it is also better in certain situations because one can loft many faces in sequence to create complex shapes.



Exercise

- Use sweeps and lofts to model the follow object.
- Pretend you're 3d printing a brick. It happens to have a wire running through it on the left and an oddly shaped shaft running through it on the right.
- The shaft is unlike any you've seen before: it starts as a hexagon and slowly transitions into a circle.

