BEZIER AND SPLINE CURVES: *bezierspline.rb* - QUICKCARD

1. Installation

- **Unzip** *'bezierspline.zip'* **in Plugins directory of Sketchup**: it should install the following files:
    - **bezierspline.rb** *(main macro)*
    - **LibTraductor.rb** *(utility to support language translation)*
    - **BZ__CubicBezier.rb** *(extension for Cubic Bezier)*
    - **BZ__BsplineU.rb** *(extension for Uniform B-Spline)*
    - **A BZ_DIR subfolder**, which contains icon files for the toolbar as well as the documentation
- **Language**: by default, language of operating system, if supported, otherwise English
- **Menus**: all Bezier family curves have their menu item in menu **'Draw'**
- **Contextual menus**: When a curve is selected, the Edit menu is in the contextual menu
- **Icon toolbar:**

2. Creation Mode

- **Drawing mode** for entering the control points (default depends on curve type):
    - **Start / End**: click on start point, then on End point, then intermediate points

    - **Open-Ended**: click on points in sequential order

    Double-Shift allows toggling between modes (before entering 2 points!)
- **Maximum number of control points:** type new number in **VCB** → ex: *"43"*
- **Finishing creation mode**: **Double-click** on last point to enter will switch to Edition mode. Termination options are also available in contextual menu
- **Undo**: **Esc** will remove last point entered. **Double-Esc** to cancel all and create a new curve. Note that Sketchup Undo (Ctrl-Z) will cancel all entries

3. Edition Mode

All actions will be immediately reflected in the drawing

- **Entering Edition mode**: Select curve, and **Right-click** to show contextual menu
- **Exiting Edition mode**: **Double-click** anywhere outside the polygon (or options in contextual menu)
- **Moving control points**: **Click and drag** a point or a segment between 2 points
- **Adding control points**: **Double-Click on a segment** to create a new control point
- **Deleting control points**: **Double-Click on a point** to delete it.
- **Undo**: **Esc** to undo last change. **Double-Esc** to cancel all changes. Note that Sketchup Undo / Redo (Ctrl-Z) is supported, but can go back beyond initial state.

4. Common to Creation and Edition modes

- **Plane Lock toggle Ctrl key** (filled square mark) for curve plane - press **Axis Arrows** to force perpendicular plane to selected axis
- **Axis Lock (Edition mode only)**: without Plane lock set, **toggle Axis Arrows** to force move along selected axis – Down Arrow to deactivate.
- **Precision (if applicable)**: type new number followed by 's' in **VCB** → ex: *"35s"*
- **Extra parameters**: press **TAB** to call the dialog box for additional parameters
- **Loop toggle**: **F8** to close curve by a segment, **F9** to close by a 'nice' curve, **F7** to cancel loop. F8 and F9 are toggle keys. Number of segments of the closure can be changed in the VCB: type new number followed by '**c**' in **VCB** → ex: *"14c"*
- **Show curve vertices**: **F5** toggles display of vertices on the curve
- **Extra Parameters**: **TAB**, when applicable (for instance for Uniform B-Splines)

5. Curve conversion

- Option in **contextual menu of a selected curve**, but depends on type of curve
- Any Sketchup curve can be converted into a Polyline
- Polyline can then be converted into Spline curves