



## ARCH1291 – Visual Studies II Assignment 4: Surface Study

### INTRODUCTION

This assignment will focus on building core NURBS modeling skills, including developing familiarity with the available freeform surface tools, local vs. global editing of surfaces, and deriving curves from surfaces using projections, contours, and various methods of extraction. You should become familiar with surface domains, surface normal directions, and surface curvature. You are also expected to be able to use advanced display methods for surfaces, including backface shading and UV isocurve coloration.

### READINGS

View in preparation for next week's class: <http://vimeo.com/41750189>, <http://vimeo.com/41746439>, <http://vimeo.com/41824236>

### INSTRUCTIONS

1. Download the provided template file from your 1291 Dropbox folder:
  - a. Your\_Name > Assignment4 > YourName\_assignment4\_template.3dm
2. Use the provided construction geometry in the template file (curves and a single point) to complete a series of surface types. The commands for the command line are shown in parentheses. Remember, you will use different elements of the provided construction geometry based on the particular surface type you are modeling.
  - a. Extrude curve (**extrudeCrv**)
  - b. Extrude curve along curve (**extrudeCrvAlongCrv**)
  - c. Sweep 1 rail (**sweep1**)
  - d. Sweep 2 rails (**sweep2**)
  - e. Patch surface (**patch**)
  - f. Surface from edge curves (**edgeSrf**)
  - g. Surface from lofted curves (**loft**)
  - h. Surface from curve network (**networkSrf**)
3. Copy all of the surfaces 15" in the positive Y direction and match all of their surface normal directions **and** UV isocurve directions.
4. Copy all of the surfaces another 15" in the positive Y direction and evenly extract 10 isocurves in the X and Y directions.
5. Copy all of the surfaces another 15" in the positive Y direction and contour along the Z axis using a step of 0.1".
6. Copy all of the surfaces another 15" in the positive Y direction and rebuild them to have 12 points in the U and V direction and 5 degrees in the U and V direction.
7. Create a closed curve and array it with 10 units in the X direction and 10 units in the Z direction. Copy all of the surfaces another 15" in the positive Y direction and use the **flowAlongSrf** command to remap the closed curve array to the surfaces.
8. Copy all of the surfaces another 15" in the positive Y direction. Repeat step 7, but this time turn on **Record History**.

### GRADING

To receive a grade, your Rhino (\*.3dm) file must be submitted to your Dropbox folder by the beginning of class next week.

Assignment 4 will be graded as follows:

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|---|-----|
| 1. Is the file named properly (" <i>Professor'sLastName_Sp13_YourLastName_Assignment4.3dm</i> ")? | 10% |
| 2. Correct completion of all surface types in step 2.   | 10% |
| 3. Agreeing surface normal directions in step 3.  | 10% |

4. Matching U and V isocurve directions in step 3.	10%
5. Correct completion of step 4.	10%
6. Correct completion of step 5.	10%
7. Correct completion of step 6.	10%
8. Correct completion of step 7.	10%
9. Correct completion of step 8.	10%
10. Use of proper layer management.	10%