**REQUIREMENTS:**

Create (2) 11"x17" Drawings and (1) 3D Print

Process:

Step 01: Using your (2) assignment 03 polyhedra fields apply one or more of the subtraction techniques listed below.

Step 02: Apply any of the pen techniques from the previous (2) assignments to the *interior* of the polyhedra, utilizing PS transformations to map convincingly.

Requirements: Remove at least 50% of the interior mass of your polyhedra fields

SUBTRACTION TCNQS:

Boolean - Subtraction, Union, Intersection, Split, or any combination thereof

Contour - Make horizontal or vertical sectional contours, or both

Wire cut - The 'WireCut' command trims a polysurface with a curve similar to cutting foam with a heated wire

SolidPtOn - Use 'SolidPtOn' to manipulate the original 3D Model _ then cut a section using a technique of choice. Helpful hint: The 'Shell' command is a great tool for adding thickness to a closed polysurface

DUE DATE AND TIME:

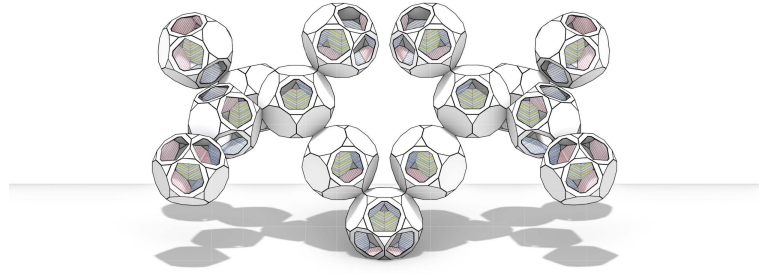
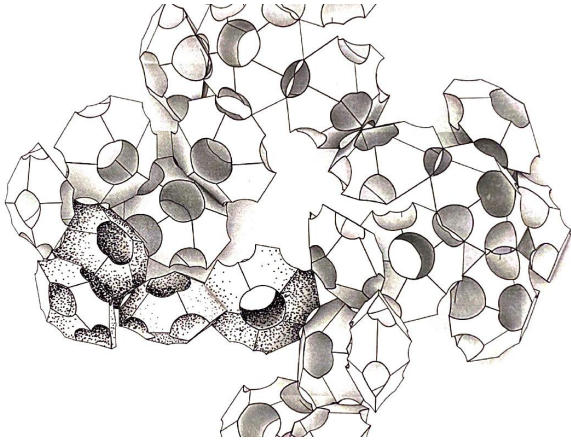
Before Class-05

SUBMIT:

Upload a single PDF file with (2) pages to your individual drive folder

FILE NAMING:

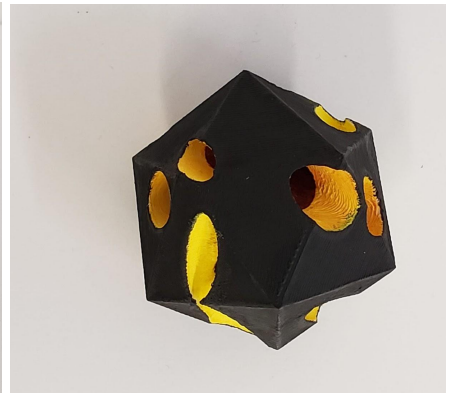
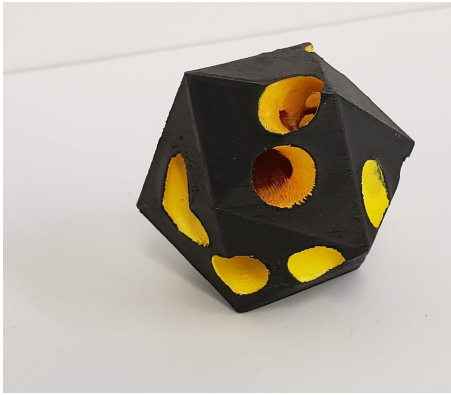
FIRSTNAME_LASTNAME_A#.PDF



ADDITIONAL RESOURCES:

[Subtraction Techniques Video Tutorial](#)

See Next Page for 3D Print Assignment

**Project:**

Produce (1) 2"x 2" 3D Print using one of your Assignment 03 Rhino Polyhedra

Process: Scale your polyhedra to 2" x 2"

Use one or more of the Rhino Subtraction techniques from Assignment 04 on the Polyhedra

Note: the polyhedra needs to remain a **closed solid polysurface**

Convert your closed polysurface to a Mesh (use the **Mesh** command)

Use the **Check** command to make sure there are no naked edges

Note: make sure there are not multiple meshes, do not export the polysurface, measure your mesh thickness using the **Vertex snap**

See Pages 2-3 for some helpful mesh making techniques

Requirements:

3D Print must be completed with white filament

3D Print must be painted — experiment with spray paint, hand painting, and masking techniques

Photos must be taken using a foam core base and back. See the [Documentation Handout](#).

Required Photos:

(1) Top Photo

(2) 3D Views

Use Photoshop to adjust Brightness, Contrast, Exposure, Color Balance, etc...

Use InDesign to assemble your three images into a triptych on one 11" x 17" page

Topics Covered:

Closed Solid Polysurface, Good Meshes, Naked Edges, Layer Height, In fill, Build Material vs. Support Material

DUE DATE/TIME:

Staff and Khan Sections Due Before Class 06 - Peluso and Gros Sections Due Before Class 07

SUBMIT:

Upload a single PDF file with (1) page to your individual drive folder

FILE NAMING:

FIRSTNAME_LASTNAME_A#.PDF

Standard Accurate and Precise Surface to Polysurface to Mesh Method:

1. Scale your polyhedra to 2" x 2"
 2. Begin with Surfaces that do not have any thickness
 3. Join your surfaces into a **Closed Polysurface** (use the join command)
 4. Apply Rhino Subtraction Techniques
 5. Convert your closed polysurface to a Mesh (use the Mesh command)
- Use the **Check** command to make sure there are no naked edges

Things to look out for: make sure there are not multiple meshes, do not export the polysurface, measure your mesh thickness using the **Vertex** snap

Offset Surface Method:

Recommended steps for working with **Open** Polysurfaces.

1. Scale your polyhedra to 2" x 2"
 2. Begin with Surfaces that do not have any thickness
 3. Join your surfaces into a polysurface (use the join command)
 4. Use the OffsetSrf command with the following settings to add a thickness
Offset Distance = .125" (Suggested size)
- Check on **Solid = Yes**
5. Apply Rhino Subtraction Techniques
 6. Convert your closed polysurface to a Mesh (use the Mesh command)
- Use the **Check** command to make sure there are no naked edges

Things to look out for: make sure there are not multiple meshes, do not export the polysurface, measure your mesh thickness using the **Vertex** snap

Offset Mesh Method:

Recommended steps for working with Meshes vs. Polysurfaces.

1. Scale your polyhedra to 2" x 2"
 2. Begin with Surfaces that do not have any thickness
 3. Join your surfaces into a **closed** polysurface (use the join command)
 4. Convert your closed polysurface to a Mesh (use the Mesh command)
 5. Use the OffsetMesh command with the following settings to add a thickness
Offset Distance = .0625" (Suggested size)
- Check on **Solid**
- Check on **Both Sides**
- Check on **Delete Mesh Input**
6. Use the **Mesh Boolean** commands, note: all objects need to be meshes
- Use the **Check** command to make sure there are no naked edges

Things to look out for: make sure there are not multiple meshes, do not export the polysurface, measure your mesh thickness using the **Vertex** snap



Additional Resources:

[Ultimaker Cura 3D Print Tutorial](#)

Remote 3D Printing Instructions:

The model shop is open and is ready to handle your 3D prints! All 3D prints should now be submitted virtually via email to: coamodelshop@iit.edu and paid for via money on your hawk card. When submitting a file your email should include the following:

- Subject header = Print
- Hawk ID A#
- Filament color = Black or White
- How many hours and minutes your print will take
- Name of your file

****1 print per email 2 prints = 2 emails

[3D Print Instructions](#)