Department of Architectural Technology
New York City College of Technology – City University of New York
300 Jay Street, Brooklyn, New York
11201

ARCH 1191: Visual Studies I
M 11:30am - 2:00pm
Professor Valdez
wavearchitecture@outlook.com

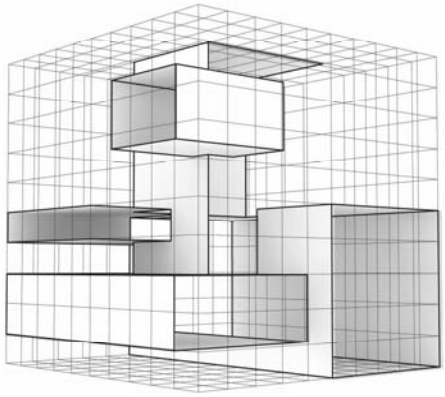
Week 9_Assignment #9: 3_D Modeling with Rhino Part I

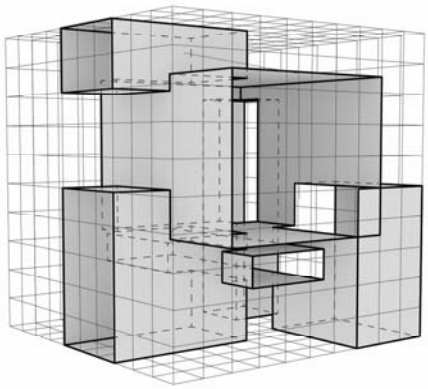
Computer Program(s): McNeel Rhinoceros

Student Learning Objectives:
Upon successful completion of this assignment, the student will:
1. Understand how to model in 3D a simple geometric object in McNeel Rhinoceros (Rhino).
2. Know how create a Rhino model file.
3. Know how to toggle between the four standard view ports.
4. Know how to set up units.
5. Know how to set up a grid.
6. Know how to use the solid tools palette.
7. Know how to use Boolean operations (addition, subtraction) in order to create more complex forms.

Assessment:
To evaluate the student's achievement of the learning objectives, the professor will do the following:
1. Evaluate the student's understanding McNeel Rhinoceros by examining both the digital file and the hard copy output.

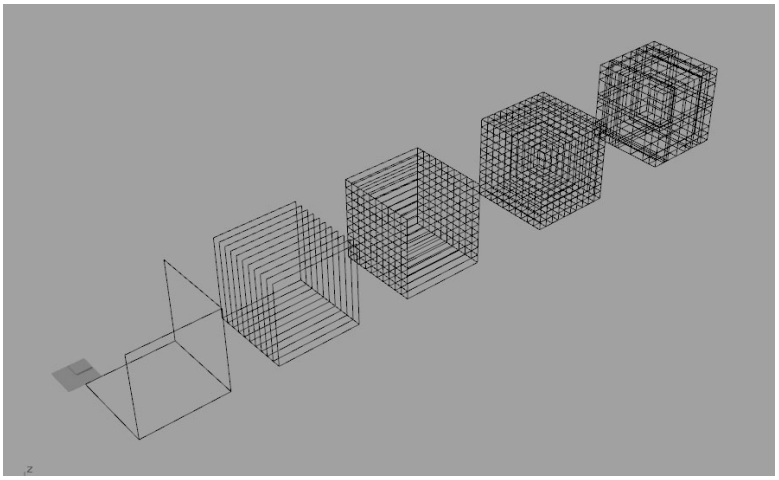
Project Description:
In this assignment, you will model in three dimensions digitally using a set kit of parts generated by using the "solid" options in Rhino. The first phase consists in generating a catalog of solid /void prototypes. These studies will be composed of an aggregate of small, medium, and large spaces. These spaces will be subdivided from an overall bounding volume of 24'x24'x24'.



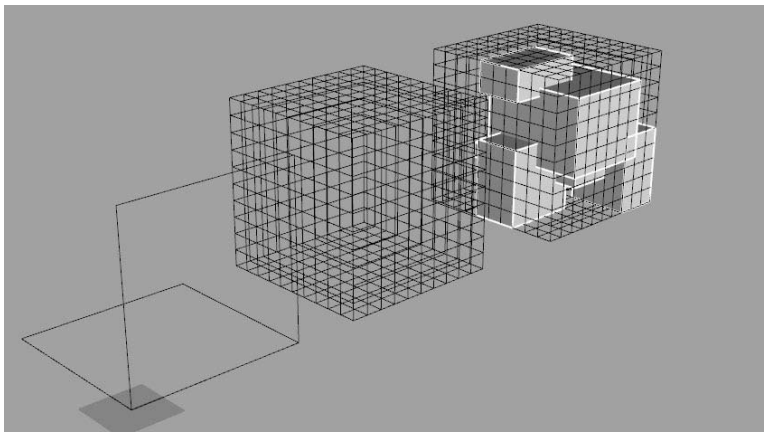


Process:
In Rhino design a matrix of (9) prototypes. Each prototype will follow this methodology:
1. Create a new file in Rhino.
2. Choose units, feet.
3. Practice toggling between the different view ports: top, perspective, front, and right.

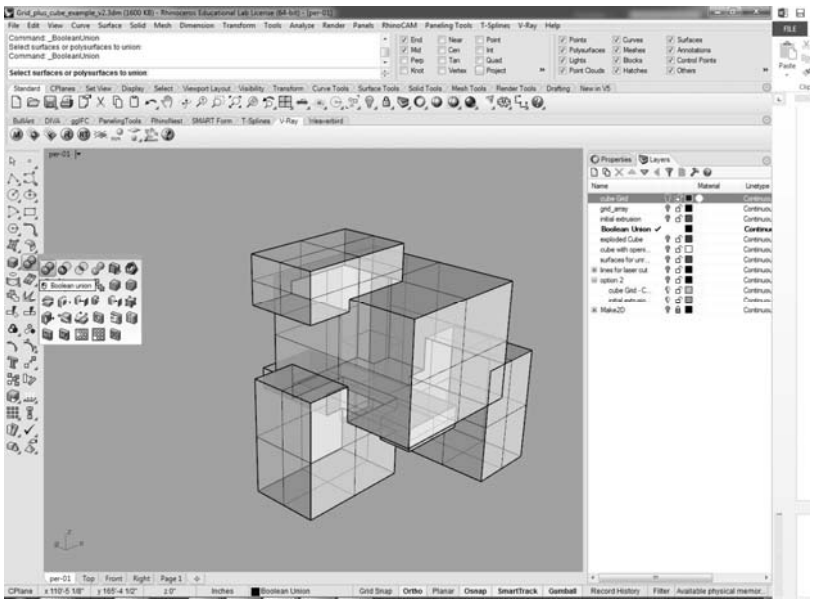
4. Familiarize yourself with the tool palettes: some tools will be universal between all programs studied this far: save, folder, print, copy, past, pan, zoom, etc. Scroll over all the icons that are unfamiliar. Find the solids tool palette.
5. Choose the grid tab, and set grid snap and grid spacing: a grid of 12 is best when working in feet.
6. Choose one viewport to begin your drawing.
7. Choose the rectangle curve option and create a 24ft square. Copy the square and rotate it vertically as shown in the image below.
8. Array the squares separately in the x, y and z directions and create a regulated grid within a 24ft cube. Once you've arrayed the squares you may move or delete a few of the squares to create variations within the grid.



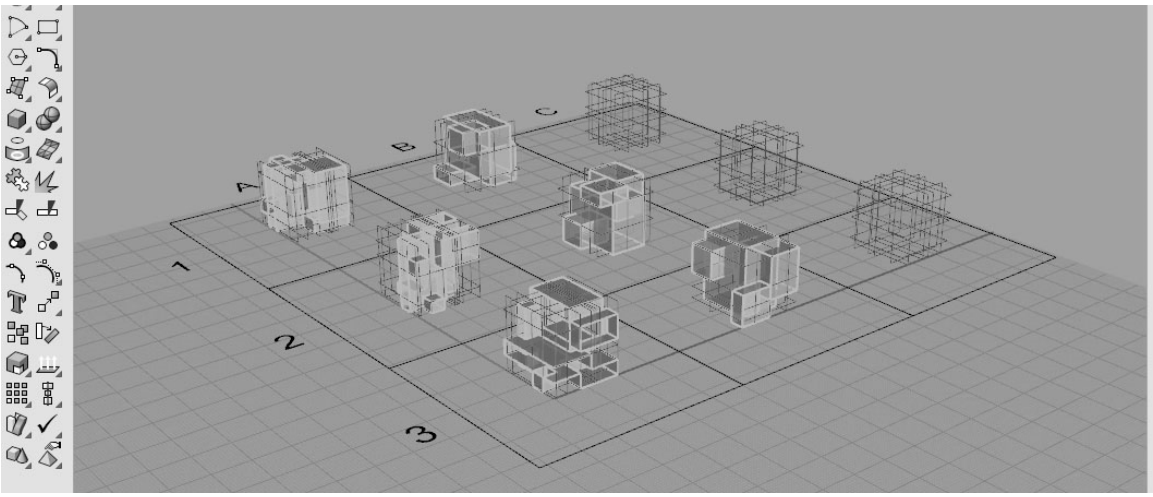
9. Generate a new layer and set it as current. Using the grid as a reference and using the "box" tool from the solids menu create a variety of rectangular volumes within the overall bounding box that vary in size from small, medium, to large. The proportions of the volumes must be derived from the regulating lines. Use the following tools to help generate the volumes:
    a. snaps and osnaps to reference the grids
    b. multiple view windows to create your rectangular forms
    c. Activate Ortho
    d. Extrude the rectangular form in either the front, top or side view.



10. Once your composition is complete, apply Boolean Union command all of the rectangular volumes, which will create a single polysurface. (type “mergeAllFaces” to combine all co-planar faces into a single surface, also uncheck the “show isocurves” option in the properties panel)



11. Copy the grid 9 times and repeat steps 9 and 10 to generate a matrix of 9 iterative tests.



Homework

1. Complete 9 iterations
2. Upload your Rhino file to blackboard

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STUDENT NAME:

Rhino		**Points possible**	**Points earned**
Setting up units and grid		10	
Layers:			
	making	5	
	naming	5	
	object organization	5	
Modeling with Accuracy:			
	solids panel	10	
	boolean operations	5	
	ortho	5	
	snap	5	
	osnap	5	
Total		55	

GRADE:

STUDENT NAME:

Rhino		**Points possible**	**Points earned**
Setting up units and grid		10	
Layers:			
	making	5	
	naming	5	
	object organization	5	
Modeling with Accuracy:			
	solids panel	10	
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Total		55	

GRADE: