WILLAMETTE UNIVERSITY
IDS 360 (CA) 3D VIRTUAL SCULPTURE
<u>DRAFT</u>
COURSE PROJECT OVERVIEW

Assignment #1, Planar Composition:

Design a non-representational composition that uses planar forms only. The composition should have a clear focal point, should use both rectilinear and curvilinear form, and illustrate at least two other elements of concepts listed in the handout "Elements and Concepts of 3-D Design". The composition should be non-representational. Begin by making sketches on paper to design your composition. Once your design has been approved by the instructors, make a small maquette (model) from recycled cardboard (no larger than 10"), before beginning to design the form on the computer. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Computer Lab: The computer graphics (CG) goals of the first assignment are:

1. Become familiar with the fundamental concepts of 3D graphics, e.g. Coordinate systems, polygon modeling (vertices, edges, faces, etc), camera, perspective vs orthographic projections, and transformations.
2. Become familiar with the Maya interface and basic polygon tools.
3. Creating a simple light with shadows. Using lights and shadows to better define the form.
4. Learn how to work from reference images.
5. Rendering and displaying images of your work.

Assignment #2, Linear Form:

Design a harmonious, non-representational composition that utilizes only linear form. Use at least three different thicknesses. Begin by making sketches on paper to design your composition. Once your design has been approved by the instructors, make a small maquette (model) from clay (no larger than 6") in the manner demonstrated by the instructor, before beginning to design the form on the computer. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Computer Lab:

1. Representing and modeling curves.
2. Details of Polygon Modeling

Assignment #3, Transformation:

Design an effective but relatively simple composition of your choice. Copy the composition to create three clones, each or which is progressively transformed to produce four final forms that sequentially illustrate one of the following dynamics: growth, decay, or development. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Computer Lab:

1. Repetition through duplication.
2. Variation through deformation and transformation.
3. (maybe) Adding music.

Assignment #4, Subtractive Process:

Design a composition that is developed by subtractive means. Begin with a simple geometric form (cube, sphere, pyramid or cylinder. Using the method described by professor Orr, remove shaped sections of the original form to reveal the final composition. Begin design directly on the computer. Sketches and maquettes may be used as necessary. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Computer Lab:

1. Booleans: Union, difference, intersection
2. Introducing the viewer:
    1. Creating a camera.
    2. Animation: Directing a fly-through.
    3. (maybe) Stereo viewing, adding music.

Assignment #5, Volumetric Form:

Design a contrasting composition that uses only volumetric form. Optimize at least two different kinds of contrast from the following list: large vs. small, curvilinear vs. rectilinear, convex vs. concave, organic vs. inorganic. You may choose to begin designing with a sketch on paper, or begin directly with a design on the computer. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Computer Lab:

1. Organic Modeling: Polygon smoothing, subdivision surfaces, NURBS
2. Sculpt tool – Using Mudbox

3. Water-tight and Manifold topology (needed for 3D printing)

Assignment #6, Combination Planar, Linear and Volumetric Form:

Design a non-representational composition that combines Planar, Linear and Volumetric form. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Computer Lab:

1. Color and shaders in more detail
2. Texture maps.
3. Displacement vs normal maps.

Assignment #7, Multiples:

Design a composition that consists of at least three non-contiguous elements that work well together to support a shared focal point. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Assignment #8, First Student Choice:

Design a composition of your choice using the techniques and tools of your choosing. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.

Assignment #8, Second Student Choice:

Design a composition of your choice using the techniques and tools of your choosing. The final composition should be unified, balanced, and asymmetrical, avoid frontality, and make effective use of negative space.

Assignment #8 (Alternate):

Design a composition of your choice that conforms to the topology required for a 3D printer. That is, the object must be water tight, be a two-manifold, be properly scaled and have thin walls (to reduce cost). The file should be output in either stl or vrml format. (need to check how texturing will work).

Assignment #8 (Alternate):

Design a composition of your choice for a "kinetic sculpture", that moves/ responds to music. Keyframe animation will be used.

Assignment #9, Found, Scanned Element:

Scan a small, found, spatially productive object. Design a composition to incorporate your found object (or multiples of it) into. The final composition should be unified, balanced, asymmetrical, avoid frontality, and make effective use of negative space.