Maker Assignment for Mark McCombs Math 58 Class
Draft February 19, 2018

Assignment

Students will complete the safety and laser cutting training in the first weeks of the semester.

Part 1: Working in teams of four, students will cut design templates and construct a 20-unit modular origami icosahedron sculpture (see image).

I will guide students in a discussion of the implications of the decision to create the modular pieces individually vs assembly-line prior to giving out the assignment instructions.

Part 2: Working individually, students will use Adobe Illustrator to design and cut a template to create a curved-crease origami sculpture (see example images).

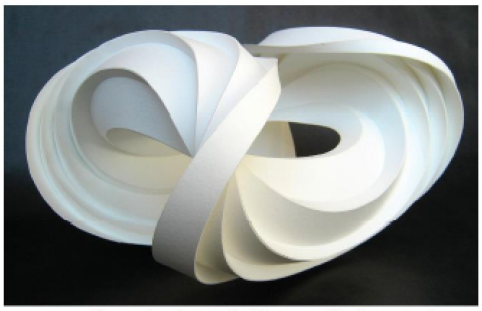

Figure 1: circles & ellipses; offset

Figure 3: circles; center shifts left and right

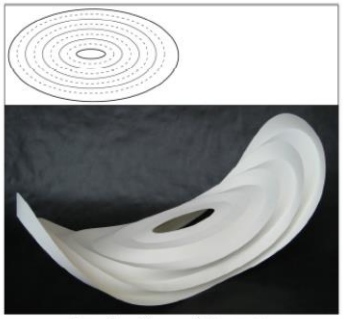

Figure 4a: ellipses; offset on center

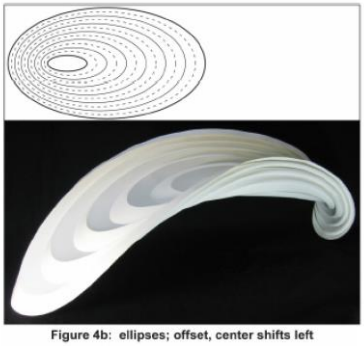

Figure 4b: ellipses; offset, center shifts left

Figure 4c: ellipses; offset, center shifts left and right

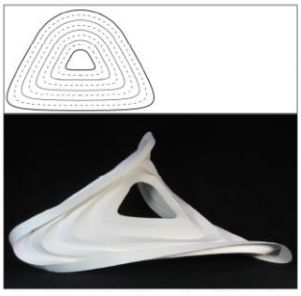

Figure 6: 2 parabolas & circle; scaled; midpt. in center

Assignments will be graded on correctness of template design and neatness of completed sculptures. Students will be given the rubric I have used when grading previous models.

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Rubric for Grading Projects	
Part 1 Modular Sculpture	
Accuracy	
(i) Was the module template drawn accurately using Illustrator?	
(ii) Were the 20 modules cut accurately using the makerspace laser cutter?	
(iii) Were the modules folded correctly?	
(iv) Is the sculpture assembled correctly?	
(v) Is the sculpture stable, i.e., does its fall apart?	
Aesthetics	
(i) Are the folds smooth?	
(ii) Is the paper clean?	
(iii) Is the sculpture symmetrical?	
Part 2 Curved Folding	
Accuracy	
(i) Was the folding template drawn accurately using Illustrator?	
(ii) Was the template cut accurately using the makerspace laser cutter?	
(iii) Was the crease pattern folded correctly?	
(iv) Is the sculpture stable, i.e., does its fall apart?	
Aesthetics	
(i) Is the design original or a copy of one of the provided examples?	
(ii) Are the folds smooth?	
(iii) Is the paper clean?	
(iv) Is the sculpture symmetrical?	
Part 3 Design Praxis	
Does the student…	
(i) illustrate that they can analyze the problem and break it into component parts?	
(ii) acquire reliable and relevant background information for the project?	
(iii) identify and works effectively within project constraints?	
(iv) consider a variety of solutions and chooses the best one?	
(v) revise and modify prototypes design over several iterations?	
(vi) takes intelligence risks and learns from failures?	
Part 4 Effective Teams	
Does the student…	
(i) seek assistance when needed from team members/classmates who have skills that fulfill specific project requirements?	
(ii) assist team members/classmates when his/her skills are sought and valued?	
(iii) seek advice, knowledge, and specific skills from experts when needed?	