UCLA Design | Media Arts

FORM

DESMA 22

Fall 2017
MW 2-4:50pm
2250A (fabrication Lab) Broad Art Center

Professor: Isla Hansen - islahansen@ucla.edu
Office Hours: MW 12-2 and by appointment

TA: Sarah Brady. - sarahroselenabrady@gmail.com

Course Summary

This project-based class is an experimental studio / lab that explores foundational concepts and techniques behind the creation of new 3D forms. Prompting the constant navigation back and forth between digital and physical modes of thinking and working, we will collaborate with computers, machines, and various tool sets both physical and virtual to translate ideas and materials into objects. The concepts we will explore as a group include physical and sensorial properties such as scale, weight, materiality, and motion, as well as function, transformation, translation, interactivity, and performance. In this introduction to polygonal mesh, solid, and surface geometries and construction techniques we will cover additive and subtractive processes, pattern-making from surfaces, rapid prototyping techniques, and general use of shop machines and tools big and small. This includes the use of lab equipment such as the laser cutter, the CNC-Router, 3D printer, sewing machines, and saws and power tools. Our experimentations will prompt us to consider relationships between objects, between objects and bodies, between bodies and technology, between technology and form, between form and language, and between computer code and visual design. Based on your own experiences, aesthetic and design sensibilities, interests, and research, you will also use this course to explore your own set of more personal and political themes and concepts as you begin to create your own definition of form.

Deadlines for Projects / Assignments

Oct 1 - Assignment 1 - Form Game Object
Oct 4 - Assignment 2 - Model Homework
Oct 9 - Assignment 3 - Pt. 1 - Illustrator plans
Oct 11 - Assignment 4 - Plans for Project I

Oct 18 - Project I - Vessel / Receptacle Project

Oct 23 - Assignment 5 - Documentation of Project I (online)
Oct 25 - Assignment 3 - Pt. 2 surface shape / cube (start 10/4)
Oct 25 - Assignment 6 - Surface Project proposal / Maya model

Nov 1 - Project II - Surface Project

Nov 6 - Assignment 7 - Documentation of Project II (online)
Nov 6 - Assignment 8 - Proposal for Project III

Nov 15 - Project III - Motion Project

Nov 20 - Assignment 9 - Documentation of Project III (online)
Nov 20 - Assignment 10 - Proposal for Project IV (in class presentation)

Dec 6 - Project IV - Interactive / Performative Object Project

Exam - Documentation of Project IV (online)

Summary of Projects / Assignments

<u>Oct 1 - Assignment 1 - Form Game Object</u>

Find an object that fits in a shoe box or small cardboard box. Bring the object to class in the box (don't take it out!)

<u>Oct 4 - Assignment 2 - Model Homework</u>

Pt. 1 Make something out of the model magic / modeling clay given to you in class. After you make something, draw it from 2 or 3 perspectives. Optional if you want to have it cut.

Pt. 2 Draw something (else) from 2 or 3 perspectives. After you draw it, try to make it out of model magic / modeling clay. Bring both forms and all drawings to class

Oct. 9 - Assignment 3 Pt. I & II

Design a simple 2D test in Illustrator for the Laser Cutter using all the functionality (vector cutting, vector engraving, raster etching, see here: http://support.dma.ucla.edu/fablab/?page_id=116)

Download a free 3D model online (try turbosquid or thingiverse). Import it into Slicer for Fusion 360 and play with some different construction techniques. Prepare an illustrator file for the laser cutter. Just your file is due.

Pt. 3 - Design due Oct. 9, full object due Oct. 25

Create a 2D illustrator file to make a hollow cardboard shape on the laser cutter. (First try a cube, then try to make a different shape if you want. Don't forget about kerf!)

Oct 11 - Assignment 4 - Plans for Project I

Plans for Project I should include multiple drawings for possibly more than one idea / outcome, also drawings of possible objects to build / make from more than one perspective. More drawings are better than good drawings!

Plans should also include measurements / properties of your Thing and the proposal for your object, a list of possible materials and cost of those materials, list of themes, and if possible, a description / title.

Oct 18 - Project I - Vessel / Receptacle Project

Design an object. It can be made of anything or any combination of materials. It will be semi-functional in the following way: it will hold the weight of and/or in someway encapsulate _____. Fill in the blank by selecting a Thing you draw from a hat in class.

Examples: I draw "orange" so I create a very specific bowl made just for an orange. I select "human," so I build a chair. I draw "air" out of the hat, I make a balloon. (I don't recommend making bowls or chairs). Your sculpture does not need to fully cover your object, but it should in some way hold / encapsulate it and should pass a weight-bearing test (or perhaps could in someway creatively avoid the weight-test).

Take into consideration what your selected item is, what it does, what it weighs, what material it is made of, what its scale is, what its inherent properties are, and from there determine the properties of your receptacle/vessel for it.

Your piece shouldn't really “work” for anything else, but be specific to your Thing. Think about weight, scale, negative space, and function. Think about your Thing. What form does it take? What does it look like? What is it used for or how to people relate to it? What is its relationship to an object that would hold it or in some way sit beneath it?

Stage your final installation with both your piece and the Thing. (If you can make alterations to the Thing in some way that is possible that enhances your installation, you can do that — as long as a person could still call the Thing that Thing). How has your Thing been newly activated, enhanced? What qualities of it have you drawn out? How does your piece change the Thing it has been made for?

Oct 23 - Assignment 5 - Documentation of Project I (online)

Post Documentation of your Vessel / Receptacle project online. This should include 2-4 great images in a relevant context or with enhancing backdrop, as discussed during documentation session. Your documentation **must** also include a **title** and **description**!

Oct 25 - Assignment 3 Pt. II - surface shape / cube (start 10/4)

Bring your hollow cube / shape from week 1 to class. Here’s the original assignment:

Design due Oct. 9, full object due Oct. 25
Create a 2D illustrator file to make a hollow cardboard shape on the laser cutter. (First try a cube, then try to make a different shape if you want. Don’t forget about kerf!)

Oct 25 - Assignment 6 - Surface Project proposal / Maya model

Create a proposal / multiple proposals for Project II (Surface Project). Your proposal should include at least one 3D model you are working on, a few sketches of possible surface layouts, and a list of materials, their costs, and possible construction techniques. Your proposal could also include - UV maps, UV textures for the maps, illustrator files, a description / defense of possible project outcomes (why are you making this?), and possible titles.

Nov 1 - Project II - Surface Project

Through workshops in class we will investigate 2D patterning for 3D objects (both physical and digital). Using these concepts and techniques, you will design and construct an object from surfaces. The method by which you create

your surfaces could be a process you design yourself. Or you could use UV patterns to map and "texture" this object, or simply to pattern, or Slicer's "Folded Panels" construction technique. Try paper, fabric, or another relatively "soft," cut-able, or foldable material. Or consider using the laser cutter or CNC router (profile cuts) to cut out your surfaces from paper, cardboard, plywood, whatever material you choose. Then connect your surfaces — sewing them, gluing them, taping, using hardware — to close your form (though it need not be entirely closed). If you want to think about "filling" the volume of your object with something — such as air, stuffing, whatever — it may be a good technique to bring your object to life.

Some questions to think about: What objects might you expect to be made of surfaces? What solid objects are never made of surfaces, but could be brought to life in a new way via thinking of their textures / outside surfaces? What are the benefits of surface construction techniques and how can you take advantage of those? What are the disadvantages to this method, and how can you avoid objects / figures that won't work well with this method?

Nov 6 - Assignment 7 - Documentation of Project II (online)

Post Documentation of your Surface Project online. This should include 2-4 great images in a relevant context or with enhancing backdrop. Your documentation **must** also include a **title** and **description,** as well as a **list of media (**materials used). If you want to describe your process and include links to any references or resources you used, great!

Nov 6 - Assignment 8 - Proposal for Project III

Create a proposal / multiple proposals for Project III (motion). Consider the examples we've looked at in class and discussions we've had. Your proposal should include at least 3 sketches and or models, measurements and material / construction plans and costs, a description / diagram of how and where the "motion" will happen in your piece, as well as some possible titles. You must also do a little research about how you will make this motion happen. Your proposal must include references and links to the resources you've used as you do this research. Your proposal could also include motion / interaction directions (how this piece is activated), illustrator files, and a description / defense of possible project outcomes (why are you making this?).

Nov 15 - Project III - Motion Project

Create something that in some way engages with the concept of motion / movement or transformation. Your piece could move using analog /physical kinetics (or basic physical computing if you are interested in trying / researching this (if so, we have lots of resources to help you, including myself and Jonathan). Or your piece could be made from something that did moved, or was moved, or relates to something

transformed / animated. How does it move or transform and why? Where does the motion come from and why or how might that matter or impact the piece? Is the motion linear, cyclical, symmetric, "random," chaotic, webbed / branching, or a one time phenomenon? Is this motion repetitive, singular, or does it create a time-based form or narrative? If the ladder, what is the relationship between formal aesthetic and narrative? Is there a "task," story, or completed image at stake? Logistically, what pieces or parts need to be built to make the motion happen? What materials do you need to use to make sure your project doesn't break and can actually move? How is the movement actuated? How long does it take, and how long does it last? Does the motion create a new work, function usefully in some way, create a new image, sound, or sculpture? What happens, where does it happen, and why does it move? Consider the final context of your piece and install it in an appropriate location for the final crit.

Nov 20 - Assignment 9 - Documentation of Project III (online)

Post Documentation of your Motion Project online. This should include 2-4 great images in a relevant context or with enhancing backdrop. You will also need to post a video to document your piece in motion. Your documentation **must** also include a **title** and **description,** as well as a **list of media (**materials used). If you want to describe your process and include links to any references or resources you used, great!

Nov 20 - Assignment 10 - Proposal for Project IV (in class presentation)

Create a presentation to get class feedback on your proposal / ideas for Project IV (Interactive / Performative Object). Your proposal presentation should include at least 3 sketches and / or models, measurements and material / construction plans, a description / diagram of how and where the interaction or performance will happen in your piece, as well as some possible titles. Why does your piece do what it does and how? You should also include references to relevant research, artists, designers, art works, fiction, pop culture, entities in nature, whatever.

Dec 6 - Project IV - Interactive / Performative Object Project

Design a form / object / sculpture / tool / space. Your primary consideration should be how you or the audience or a player / actor / user is interacting with or performing with this form. Consider aspects of your piece like touch, navigation, scale. How does it relate to the human body, how will human bodies relate to it? How does it prompt audiences to respond, act, move, play, or make use of it? Does it have a purpose to "do" something, to ease, convolute, or complicate a process? Does it interact with one part of the body or all parts? Is it an invention or tool of some kind? Is it a character, costume, or prop? Does it solve a problem? How is it used? How can it be misused? Who interacts with it and why? How do they encounter, play with, or use it?

Exam - Documentation of Project IV (online)

Post Documentation of your Motion Project online. This should include 2-4 great images in a relevant context or with enhancing backdrop. You will also need to post a video to document your piece being performed / interacted with. Your documentation **must** also include a **title** and **description,** as well as a **list of media** (materials used). If you want to describe your process and include links to any references or resources you used, great!

Course Schedule
This schedule is subject to changes. It will be updated online and I will notify you of dramatic differences in class and, if necessary, via reminder emails.

WEEK 1

Mon Oct 2
Syllabus / Intro to Form, Tour, Form Game

Weds Oct 4
Shop Safety training
Homework mini crit
Concepts in Digital —> Physical construction / CAD CAM
Intro to Laser cutter, Slicer for 360
Laser Cutter demo

WEEK 2
Mon Oct 9
Power Tool / Drill / Drill press training
How does 3D modeling relate to Power drills? Introduction to modeling, Maya
Intro to Project 1 - Due on Weds Oct 18

Weds Oct 11
Due- plans for Project I, work time / discussion
Saw Training (scroll, table, miter, panel)
Maya continued

WEEK 3

Mon Oct 16
30 min - sanding / rotary tool
Work time - Project I (troubleshooting & shop time)

Weds Oct 18
DUE / CRIT - Project I
Documentation workshop

WEEK 4

Mon Oct 23
Nurbs, patterning, & surface-based construction techniques
Intro to Project II
Sewing machine, CNC machine profile cutting

Weds Oct 25
Due - surface shape from week 1, cube arrangement game
Pattern construction,
Work time on Project II & individual meetings

WEEK 5

Mon Oct 30
Work time for Project II

Weds Nov 1
DUE / CRIT - Project II
Intro to Project III

WEEK 6

Mon Nov 6
Proposals for Project III due
Work time and individual meetings with Isla
History & theory of 3D solid construction techniques from digital to physical
Optional 3D Printing Demo

Weds Nov 8
Motion techniques, project work time
Optional CNC 3D cutting demo
Optional Multiples / simple molds demo

WEEK 7

Mon Nov 13
Work time for Project III

Weds Nov 15
DUE / CRIT - Project III
Intro to Project IV

WEEK 8

Mon Nov 20
Due - Proposal for Project IV - class presentations
Interactivity, performance, tools
Work time

Weds Nov 22
Work time for Project IV

WEEK 9

Mon Nov 27
Work time for Project IV

Weds Nov 29
Work time for Project IV

WEEK 10

Mon Dec 6
DUE / CRIT - Project IV

Your final exam is Excellent documentation for your Project IV with description.

CLASS POLICIES & RECOMMENDATIONS

Recommended Equipment

Graphing / gridded notebook and / or drawing sketchbook
Pencils / pens !
Laptop + 3 button mouse + pad
Camera / cell phone with camera
Optional:
Exacto knife, tape, glue, calculator, mini measuring tape
Sewing kit (for purchase in house)
Supplies for each project (find / purchase your own or purchase limited materials / quantities in house)

Initial Software to Download

Illustrator (adobe)
Maya (autodesk)
Fusion 360 (autodesk)
Slicer for Fusion 360 (autodesk)
Photoshop (adobe)
Blender

Enrollment Cap

This course is held in the fabrication lab. The safety policies regarding the number of students able to work in the shop at one time exist for good reason, and so this class has a strict cap of 14 students. There is no flexibility. Students who are enrolled **and present** during the first class will have priority for enrollment. If you do not get in to this class this quarter, please try again next quarter.

Attire

(Direct from Fab Lab Safety Manual!)
- Proper shop clothing must be worn at all times, including long pants and closed-toe shoes. Sandals and flip flops are prohibited. (Heels are not advised either)
- No loose clothing may be worn, including ties, scarves, loose sleeves, and loose skirts.
- Remove loose jewelry before beginning work; including rings, necklaces, bracelets and watches.
- Long hair must be pulled back and secured and contained; long beards must also be contained.

Attendance Policy

Students are expected to be present and on time to class every day. Absences should be excused by a doctor's note, comparable documentation, or an email from me a week in advance in which I say you are excused for a valid reason. Your 2nd unexcused absence will result in a 2% drop in your final grade, your 3rd, a 4% drop, your 4th, an 8% drop, your 5th, 16%, etc. If you are over 30 minutes late it will count as an absence unless you are excused.
Please note: All "work days" on the syllabus are for working on projects and you are required to be in class. This is not an opportunity to work at home. This is the only time your class and only your class will have individual shop time. The lab / shop is open and there for you to use — so be ready to work!

Grade Breakdown:

Attendance
This can only work negatively for your grade as described in the attendance policy.

Participation - 15%

Verbal, critical, and informed participation in class. Productive use of lab hours, work time, and attendance could also effect this grade.

Assignments (10) - 25%
Completed on time, assignments will be graded on concept, execution, and effort. Each assignment will be graded out of 5 points.

Projects (4) - 60%
Completed on time, projects will be graded on concept, execution, and effort.

- Project I - Due Oct. 18 - 12%
- Project II - Due Nov. 1 - 14%
- Project III - Due Nov. 15 - 16%
- Project IV - Due. Dec. 6 - 18%

A: 90-100, B: 80-90, C: 70-80, D: 60-70, F: 60 and below

Projects and assignments may be turned in up to four days late with a 10% deduction. Projects and assignments handed in any later cannot be accepted, as this course is so short and will move quickly! You may re-do any project or assignment you have already handed in on time for a chance for another grade. You may do this at any time and I will re-grade the work with a 5% deduction.

Disability services

UCLA strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on a disability, please let me know as soon as possible. It is necessary for you to register with the UCLA Center for Accessible Education so that we can establish reasonable accommodations. Please register here: http://www.cae.ucla.edu/. After registration, make arrangements with me to discuss how to implement these accommodations.

Statement on Title IX & Civil Liberties

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses, just as discrimination based on race / ethnicity are. If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at the UCLA Title IX office here:

https://www.sexualharassment.ucla.edu/

Also check out the UCLA Civil Rights Project for resources, tools, and research projects regarding racial / ethnic equity and securing civil liberties / educational opportunities for historically under-represented groups. Their website is here:

https://www.civilrightsproject.ucla.edu/