Imagine something never done before by a method never before used whose outcome is unforeseen

— Allan Kaprow
EMILY CHEN
Without the opportunity to learn through the hands, the world remains abstract, and distant, and the passions for learning will not be engaged.
the future favors the flexible
play is the greatest natural resource in a creative economy
PLAY SUPERPOWERS

manipulate
deconstruct and hack

morph
think flexibly and be tolerant of change

move
think with our hands and play productively
The world doesn’t need more people with good grades. The world needs people who see the really tough problems as puzzles, and have the tenacity and creative capacity to solve them.

- Gever Tulley, TEDxKids, 2011
An interface is the link between a user and a product that communicates how a product will be used, creating an experience for the people who will use it.
WHAT IS AN INTERFACE?

It provides the framework, elements, and resources for a “conversation” to take place between users and products.
I believe design is an intention, purpose, plan: and that good design is therefore by inference, where such plan has been well conceived, well executed, and of benefit to someone

- Milner Gray, Designer
Design is all around us -
either we control it - or it controls us

- Wally Olins
Design is the difference between doing it, and doing it right.

- Mark Fisher
With art - if you like, you can be really weird. But in design you have to think about what other people will like.

- Ghisli, age 10
Design is in everything we make, but it is also between those things. It’s a mix of craft, science, storytelling, propaganda, and philosophy.

- Erik Adigard
What is your definition of design?

A plan for arranging elements in such a way as to best accomplish a particular purpose.
Is design an expression of art .... an art form?

The design is an expression of the purpose. It may ... if it is good enough ... later be judged as art.
Is design a craft for industrial purposes?

No - but design may be a solution to some industrial problems
What are the boundaries of design?

What are the boundaries of problems?
Design depends largely on constraints.
What constraints?

The sum of all constraints.

Here is one of the few effective keys to the design problem - the ability of the designer to recognize as many of the constraints as possible - his/her willingness and enthusiasm for working within these constraints - the constraints of price, of size, of strength, of balance, of surface, of time, etc ... each problem has its own peculiar list.
Does design obey laws?

Aren’t constraints enough?
Everyone designs who devises courses of action aimed at changing existing situations into preferred ones

- Herb Simon
LOW-BUDGET 3D PRINTERS

CITRIS INVENTION LAB

EQUIPMENT AND TOOLING
HIGH-END 3D PRINTERS

CITRIS INVENTION LAB

EQUIPMENT AND TOOLING
2-LAYER CIRCUIT BOARD MILL

CITRIS INVENTION LAB

EQUIPMENT AND TOOLING
SPICE PRINTER
kylan nieh
victor sandberg
hursnal patel
DARK MAZE
brittany cheng
jonathan cotte
hursaal patel
curtis hwang
MY CITY

karl landin
victor sandberg
kylan nieh
alice lee
AUTO METER READER
zack jacobson-weaver
WARNING: THE FUTURE WILL BE PHYSICAL
physical sketching - learning to give form to ideas using drawing, sketching, cutting, folding, as well as modeling software tools and digital fabrication

materials - fluid use of new materials for making such as paper, cardboard, foam core, fabrics, textiles, string, wire, moss, etc.

sensing and expression - skills in electronics from programing simple Arduino based microcontrollers to attaching sensors and actuators in the design of novel, compelling interactive objects
IN THIS STUDIO COURSE YOU WILL

get your hands dirty
make real physical objects
cut paper
design circuits
cut forms
create 3D forms
program sensors
STUDIO / SEMINAR COURSE

Lectures
Discussion
Field Activities
Studio Making
Provocations
Design work-sessions
Critiques of student work
YOU MUST!

The course will result in a final show of student final prototyped interactive physical technologies

17 Feb Provocation 01 Critique

19 Mar Provocation 02 Critique

7 May Final Critique

Two Maker Field Trips You Must Attend One

Safety Training

Pay a $125 Lab Fee

No overlapping classes — Attendance (classes are not recorded)

Work with your Group in lab outside of class

Maker Faire 15-17 May
LAB FEES $125
We will also begin each class with a zip.crit

A zip.crit is a rapid crit of an interface, object, design, etc

We will be rotating through the class roster and choosing one person to do a zip.crit each class

That person will select an interface, object, design, instructable, kickstarter, toy, etc.

At the beginning of class that person will briefly introduce the object, interface, design to us

The class will collectively critique the artifact
Readings will be assigned throughout the semester. Everyone is expected to read the readings. Two people will be selected for each reading to prepare a class presentation. Each student is expected to engage in class discussions when readings are assigned. **This counts towards your class participation grade.**
One of the main learning exercises in this course is the critique.

We will be building this skill throughout the semester.

Assignments will be critiqued in class.
RULES OF ENGAGEMENT

Be there!

Critique days mandatory attendance

If you are not in class or late we will deduct from your attendance grade.

There will be no exceptions
Be active!

During the in class critique everyone is expected to be engaged in the discussion.
RULES OF ENGAGEMENT

Be attentive!

no laptops, phones, electronics
out or used during critique and
selected other parts of class
Attendance of all classes is mandatory.

You are allowed two absences for the semester without penalty (except critique days); thereafter you will receive zero credit for the missed studio.

To receive an additional **excused** absence, you must ask in advance, and receive an acknowledgment from the instructor.
RULES OF ENGAGEMENT

Excusable absences include family emergencies, job interviews, and presenting at a conference.

It does not include wanting to leave early for long weekend or vacation.

To receive credit for attendance, you must arrive on time.

No late assignments will be accepted.
Assignments, timely attendance, and in-class and team participation are a critical part of the grade.

Bringing examples from outside of the class is considered to be an assignment and is also important.
In addition, the process of exploration is as important as the final product, so it is important that students manage time well and devote time to working on the projects during the course of the week.

If class time is given as a worksession and is not put to good use, students’ grades will be penalized.
For projects done in teams, students will be graded on individual contributions as well as synthesis with the team.
GRADING

15% PARTICIPATION
15% FIELD ACTIVITIES
10% PROVOCATION 1
20% PROVOCATION 2
40% FINAL PROVOCATION
Critical Making will operationalize and critique the practice of “making” through both foundational literature and hands on studio culture. As hybrid practitioners, students will develop fluency in readily collaging and incorporating a variety of physical materials and protocols into their practice. With design research as a lens, students will envision and create future computational experiences that critically explore social and culturally relevant technological themes such as community, privacy, environment, education, economics, energy, food, biology, democracy, activism, healthcare, social justice, etc. More information can be found from the links above. (edit)