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**4.141: How to Design (Almost) Anything**

**Class Overview**: Introduces fundamental design principles as a way to demystify design and provide a basic introduction to all aspects of the design process. Through lectures and weekly exercises, students will develop their skills and enable creativity, abstract thinking, representation, iteration and design development. An introductory class intended for students without a design background geared towards enabling more effective collaboration with designers and the ability to apply the foundations of design to any discipline. Limited to 25; preference to Course 4 and 4B majors and Design and Architecture minors, and first- and second-year students.

**Exercise 1: Design a Process**

The first project explores the design process and asks students to develop their own design and fabrication process that goes from 1D to 2D to 3D. Each week the class will dive into one aspect of the design process from context to concept, drawing, making, iterating, building a narrative and finally presenting. This path exemplifies a traditional design process where you start with an idea and you work through testing, expanding then refining and eventually realizing that idea. Through these weekly topics and assignment students will develop their own process and method of fabrication. By starting with 1D materials, students will develop their own strategies for folding, creasing, weaving, braiding, felting or otherwise manipulating these materials into 2D and ultimately 3D structures. This lineage allows us to explore the fundamentals of geometry from line, surface to volume as well as think about methods of drawing and constructing. Many of the materials and physical things around us are also built from 1D to 3D think of DNA or yarns to textiles or 2x4s to buildings. Students will develop this translation through a series of procedures or rules for translating the 1D material into interesting and unusual 3D objects.

Context >> Concept >> Draw >> Make >> Iterate >> Analysis/Narrative >> Present

**Deliverables for Exercise 1:**

-Drawings/Representation

-Diagram of Rules/Procedures

-Physical models and fabrication process +/- 1’x1’x1’ Volume

-Concept/Context/Narrative statement

-Final Presentation

**Exercise 2: Design Something with the Process**

In the second exercise students will create hybrid fabrication processes by pairing with another student and creating a new process with a new set of rules/procedures. This hybrid process should take the best of both projects and create something surprisingly new/unusual/exciting that is more than the sum of its parts. The second exercise will explore an alternative design process that happens in reverse from the traditional process explored in Exercise 1. This discovery-based or research-oriented design process starts by making, experimenting, testing and discovering something then develops a concept around what it is, why it is useful and what context it relates to. The act of making leads to the discovery of something interesting and useful. Each week, students will refine their new hybrid processes by exploring the weekly topic, ultimately leading to the final presentation of this new process emphasizing the final objects that were created.

Make >> Draw >> Iterate >> Concept >> Context >> Analysis/Narrative >> Present

**Deliverables for Exercise 2:**

-Prototype models

- Diagrams of the design/fabrication process

-Final Objects

-Drawings

-Narrative/Context of the objects

-Final Presentation

**Structure of the Course - Weekly:**

-Monday 15-30min intro presentation on the topic

-Then desk crits on last week’s assignment

-Wed: Student Presentations on the assignment from Mon

-Then desk crits & next week’s assignment

**4.141/4.142 Tentative Schedule:**

**Exercise 1: (7 Weeks) Design the Process**

Week 1 (Feb. 5) ***Context***

2/7 Exercise Introduction / Manufacturing Context Introduction

Abstract Series

Week 2 (Feb. 12) ***Concept***

2/12 Studio / Concept Intro + Desk Crits

2/14 Studio / Concept Presentations

Week 3 (Feb. 19) ***Representation***

2/19 (No Class Presidents Day)

2/20 (Monday Classes on Tues) / Draw Intro - *Intro Rhino/Adobe*

2/21 Studio / Weekly Presentations + Desk Crits

Week 4 (Feb. 26) ***Make***

*Intro to fabrication/shop trainings*

2/26 Studio / Make Intro + Desk Crits

2/28 Studio / Weekly Presentations + Desk Crits

Week 5 (Mar 5) ***Iterate***

3/5 Studio / Guest Lecture: [Allan Chochinov](https://productsofdesign.sva.edu/faculty/allan-chochinov)

3/7 **Exercise 1 Interim Review**

Week 6 (March 7) ***Iterate***

3/7 Studio / Desk Crits

3/09 Studio / Weekly Presentations + Desk Crits

Week 7 (March 12) ***Analysis/Narrative/Documentation/Representation***

3/12 Studio / Narrative Intro + Desk Crits

3/14 Studio Weekly Presentations + Desk Crits

Week 8 (March 19) ***Presentation***

3/19 Studio / Prepare Presentations + Desk Crits

3/21 **Exercise 1 Final Critique**

Week 9 (March 26 Spring Break)

3/26 No Class

3/28 No Class

**Exercise 2: (7 Weeks) Design with the Process**

Week 10 (April 2) ***Make***

4/2 Exercise 2 Introduction & Hybrids

4/4 Studio / Make

Week 11 (April 9) ***Draw***

4/9 Studio / Make Desk Crits

4/11 Studio / Draw Desk Crits

Week 12 (April 16) ***Iterate***

4/16 No Class (Patriots Day)

4/18 Studio / Iterate Desk Crits

Week 13 (April 23) ***Concept***

4/23 Studio / Iterate Desk Crits

4/25 Studio / Concept Desk Crits

Week 14 (April 30) ***Context***

4/30 Studio / Concept Desk Crits

5/2 **Exercise 2 Interim Review**

Week 15 (May 7)***Analysis/Narrative***

5/7 Studio / Context Desk Crits

5/9 Studio / Narrative Desk Crits

Week 16 (May 14) ***Presentation***

5/14 Studio / Prepare Presentations + Desk Crits

5/16 **Exercise 2 Final Critique**

**Learning Objectives:**

The course consists of two projects exploring various topics through concepts, drawings and physical fabrication. Students should be able to engage with an increasing level of design research through iterative studies and move fluidly between different modes and scales of operation. Conventions of design representation and communication through drawing and modeling will be explored. Students will need to demonstrate basic application of design skills, understanding of conventions, and an ability to sustain an increasing level of research in the projects over the semester.

**Completion Requirements:**

Completion of each of the exercises, rigor in process and clarity in representation, as well as the overall progress of the semester (including attendance) will be fundamental to completing the course.

**Evaluation Criteria and Grading:** The following criteria will be used for the evaluation of student’s work, both in terms of helping their progress and in final grading. (01) Concept: How clearly is the student articulating the conceptual intentions? (02) Translation of Concept: How well is the student using their concept to develop a design response to given problems? (03) Representation Appropriateness: How well matched is their choice of representational means to their intentions? (04) Representation Quality: How accomplished are they with drawing, modeling, digital representation, etc? To what degree does their representations convey what they ought to? (05) Oral Presentation Skills: How clearly are they presenting their ideas orally, whether at their desk, in class discussions, or to a more formal jury? (06) Participation in Discussions: How actively and how constructively are they involved in class discussions, both formally and informally? (07) Response to Criticism: How do they effectively take advantage of criticism from instructors, classmates and outside jurors? (08) Auto-Critical Skills: To what extent are they able to critique their own work regularly and effectively? (09) Attendance – see below.

**A: Excellent** - Project surpasses expectations in terms of inventiveness, appropriateness, verbal and visual ability, conceptual rigor, craft, and personal development. Student pursues concepts and techniques above and beyond what is discussed in class.

**B: Above Average** - Project is thorough, well researched, diligently pursued, and successfully completed. Student pursues ideas and suggestions presented in class and puts in effort to resolve required projects. Project is complete on all levels and demonstrates potential for excellence.

**C: Average** - Project meets the minimum requirements. Suggestions made in class are not pursued with dedication or rigor. Project is incomplete in one or more areas.

**D: Poor** - Project is incomplete. Basic skills including graphic skills, model-making skills, verbal clarity or logic of presentation are not level-appropriate. Student does not demonstrate the required design skill and knowledge base.

**F: Failure** - Project is unresolved. Minimum objectives are not met. Performance is not acceptable. This grade will be assigned when you have excessive unexcused absences.

**Studio Culture:** Work in the studio will build sequentially. Therefore, your commitment to continual development on a daily basis is of paramount importance. It is important that you take advantage of the studio environment. Magnification of your development as a designer is made possible by the collective nature of the class. Group reviews are collective for a reason. Each of you has something to gain from your peers. Since studio is a place for all, it necessitates the careful attention to the needs of everyone in it. Please see your instructors if there are any problems that you are unable to resolve on your own. All spraying of fixative, spray paint or any other substance should be done in the shop.

**Attendance:** Attendance for the full duration of each class is mandatory. The studio is an exceptional learning environment that requires your physical presence as well as your intellectual presence. You are allowed three excused absences for the semester. An excused absence is defined as one that was discussed with and approved by the professor at least 24 hours prior to the date of absence, or a family or medical emergency that is confirmed by your physician or a dean in Student Support Services. Absences beyond the three allotted will result in a decrease in your final grade. If you miss six or more studio classes, you will be asked to drop the subject or receive a failing grade.