

# Advanced Design: Product Design

## The Cooper Union School of Art

Spring 2024

FA-315B-1

## Class Website

<https://adpd.dutyfree.school>

## Date & Location

Tuesdays, 6–9:50pm

41 Cooper Square

901 Studio (Lecture Room)

806 Studio (Computer Lab)

## Instructors

Nikki Makagiansar

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## Course Description

In this course, students will learn how to critically conceptualize, develop, and iterate on interactive web-based products. Through a mix of lectures and tutorials, we will explore the web as a creative medium, and investigate past and present efforts that expand on and challenge the product design process. Projects will be guided by comprehensive research, wire-framing, and developing an interactive system using both prototyping software and basic HTML, CSS, and JavaScript. No prior coding experience is required.

*3 credits. Pre-Req: Graphic Design II, Pre/Co-Req: Typography.*

## Learning Outcomes

By the end of this semester, students will:

- Use a basic vocabulary of interaction design to articulate their design process and critique others within the context of web-based projects.
- Evaluate how typography and its variables are applied to interactive systems to facilitate orientation, create consistency, and support users and systems.
- Use appropriate prototyping methods, including software tools and basic HTML, CSS, and Javascript to visualize, communicate, and evaluate web-based products.
- Think critically and develop their own, distinct thoughts on the role of digital within the larger canon of design.

# Required Materials & Supplies

## Hardware

- A working laptop with modern browser(s) installed

## Technology

- [Microsoft Teams](#)  
We will be using this to organize our class material and submit our projects and presentations.
- [Google Chrome](#)  
A fast, secure, and free web browser. We'll be mainly using Chrome for in-class demonstrations.
- [GitHub](#)  
We will be using GitHub to manage our code. Sign up with your cooper.edu email.
- [GitHub Desktop](#)  
We will also be using GitHub Desktop to manage our code.
- [Figma Desktop](#)  
Figma is a modern interface design tool that is collaborative online. Sign up with your cooper.edu email and get [verified as a student](#) for a free education account.
- [CodePen](#)  
We will be using CodePen for our technical demonstrations. Sign up for an account.
- [Visual Studio Code](#)  
Visual Studio Code is a sophisticated text editor for code, markup, and prose.

# Course Outline

## Unit 1: The Web is Fluid

Weeks 1–6

Students will be introduced to the web, its unique affordances, and its base technologies. In this unit, the main affordance we will focus on is the web's fluid nature. Students will be primarily working with text, with the web as a substrate. We will do a review of the core principles of typography, and how those principles translate when working with the web. Students will learn about HTML, semantic DOM, and basic CSS. Students will also be introduced to web-specific planning methods for their projects.

*This unit will culminate with Project 1: Accessible Book, which will be presented to the class on February 27.*

## Project 1: Accessible Book

Due February 27

Students will choose a piece of text to work with and typeset it as a web page. Students should consider how they can redesign their texts as a website to take advantage of the dynamic and non-linear potential of the web to create a new experience for the reader. The website should consist of at least five pages. A successful project requires careful consideration of navigation and typography to create a compelling new experience for the reader.

**Part 1: Concept & Sitemaps**

**Part 2: Start with HTML**

**Part 3: Style with CSS**

**Part 4: Make it Responsive**

**Part 5: Polish & Present**

## Unit 2: The Web is Interactive

Weeks 7–11

In this unit, students will learn about the interactive and generative potential of the web, in which the user takes a central role. We will build on our knowledge of CSS and learn how to develop more complex, responsive layouts by introducing positioning techniques and media queries. Students will also be introduced to JavaScript and how it works with HTML to read user interactions.

*This unit will culminate with Project 2: Generative Tool, which will be presented to the class on April 9.*

## Project 2: Generative Tool

Due April 9

In this project, we'll explore the boundaries of what a generative tool can be when it is made on the web. Students will develop a website that generates content and form by an audience's input based on a set of rules. This can take the form of a practical tool or an abstract online experience. Students are encouraged to test and try the tool they made, along with their friends and peers.

**Part 1: Concept & Sketches**

**Part 2: Digital Prototype**

**Part 3: Coded Draft**

**Part 4: Refinement & Testing**

**Part 5: Polish & Present**

## **Unit 3: The Web is Data-Driven**

### **Weeks 12–15**

In this unit, students will continue to explore the generative potential of the web, but this time in the context of data. Building on their knowledge of JavaScript, students will learn how to incorporate data into their work and explore how data can manipulate the form and content of a website.

*This unit will culminate with Project 3: Experimental Clock, which will be presented to the class on May 7.*

## **Project 3: Experimental Clock**

### **Due May 7**

Students will explore unconventional ways to visualize time by developing a time-based website. Students should consider different ways to visualize time: with or without numbers, literally or abstractly. The clock can be for a particular use case or have no specific function. A successful project is formally and conceptually resolved, and functional and interactive as a clock in some interesting way. Students are challenged to envision their work not just as static representations, but as dynamic forms.

**Part 1: Concept & Sketches**

**Part 2: Digital Prototype**

**Part 3: Coded Draft**

**Part 4: Polish & Present**

## Attendance and Grading Policy

<b>Attendance &amp; Participation</b>	25%
<b>Project 1: Accessible Book</b>	25%
<b>Project 2: Generative Tool</b>	25%
<b>Project 3: Experimental Clock</b>	25%

Your performance will be evaluated on its own merits, not based on comparing your work with other students. We focus on your understanding of concepts and your ability to apply them in a meaningful way. We don't prioritize code efficiency or professionalism as the primary criteria. We value the learning process and recognize that everyone progresses at their own pace. Should you have any inquiries regarding grading, please don't hesitate to reach out to us directly.

### Attendance & Participation

Active participation is essential and comprises 25% of the final grade. This includes, but is not limited to: keeping up with readings, assignments, and projects, contributing meaningfully to class discussions, active participation in group work, and coming to class regularly on time.

While attendance is one aspect of active participation, absence from a significant portion of class can compromise successful attainment of the course objectives. We consider a significant portion to be three weeks or 20% of class time. Lateness or early departure from class may be recorded as one full absence. We encourage you to let us know as much in advance as possible if you need to miss a class, are running late, or need to leave class early. More than three uncommunicated absences, late arrivals, or early departures will result in a deduction from your final grade.

### Late Assignments

Assignments are due on the specified date and time mentioned in the course instructions. We understand that sometimes life gets busy, so late submissions are allowed.

For each week your assignment is late, we'll deduct a small percentage from your score. If something unexpected happens (like a medical emergency or a family issue), let us know. We'll work with you to find a fair solution, like an extended deadline.

## Assignment Rubric

ASSESSMENT	NEEDS IMPROVEMENT	SATISFACTORY	GOOD	EXCELLENT
<b>CODE</b>	Does not meet the stated requirements. Is missing core components of the assignment. Contains significant errors that display a lack of comprehension or understanding of the material.	Ability to develop working functional code with limited errors. Demonstrates comprehension by building upon the technical concepts in submitted work.	Initiates learning beyond the minimum requirements of the assignment. Attempts to develop skills and takes risks without sacrificing legibility and functionality of code.	Creative solutions to nuanced and complex problems in programming. Code is formatted in an organized, highly readable manner, with minimum bugs and errors.
<b>DESIGN</b>	Design shows a lack of intentions or does not respond to the assignment brief.	Design elements are intentional and motivated by the assignment brief.	Design demonstrates an emerging level of care and consideration. Work shows strong potential with space for improvement.	Design demonstrates a well-developed sense of aesthetics or form through execution. The work demonstrates mature consideration of the relationship between concept and execution.
<b>CRITIQUE</b>	Engages superficially with the conceptual material delivered each week.	Evidence of engagement with the conceptual material delivered each week.	Demonstrates engagement with the conceptual material beyond the minimum requirements for the course. Shows emerging fluency in utilizing concepts within their own work.	Demonstrates fluent grasp of conceptual material presented. Is able to skillfully integrate concepts into their own work. Ability to build compelling narratives around individual assignments.

## Basis of Grade Determination

Grades are determined by converting percentages to GPA based on this table.

%	94–100	90–93	89–87	84–86	80–83	79–77	74–76	70–73	69–67	64–66	60–63	0–59
LETTER	A	A–	B	B–	B–	C+	C	C–	D+	D	D–	F
GPA	4	3.7	3.3	3	2.7	2.3	2	1.7	1.3	1	0.7	0

## Open Source

You are encouraged to help each other out with programming, but unless otherwise specified you must turn in your OWN work.

Copying/pasting and reusing code is a key part of the programming process. You often learn best by modifying working examples rather than starting from scratch. We stand on the shoulders of giants; that's the essence of open-source philosophy. However, there is a very important caveat: any open-source code you borrow and/or modify must be labeled as such.

## Class Schedule

The schedule may be subject to change over the course of the semester.

### Week 1 1/23

<b>Activity</b>	Introductions Syllabus, Class Overview, and Student Needs Assessment Community Agreement
<b>Lecture</b>	History & Affordances of the Web Project 1 Overview
<b>Demo</b>	GitHub Setup
<b>Assigned</b>	Project: Accessible Book, Part 1 Class Admin: Intro Survey

### Week 2 1/30

<b>Discussion</b>	Reading Reflection Accessible Book, Part 1 Reflection
<b>Lecture</b>	Web Accessibility Intro to HTML
<b>Demo</b>	Visual Studio Code Setup HTML: Basics
<b>Assigned</b>	Project: Accessible Book, Part 2

### Week 3 2/6

<b>Discussion</b>	Accessible Book, Part 2 Reflection
<b>Lecture</b>	Raw HTML as a Visual Language Intro to CSS
<b>Demo</b>	CSS: Basics
<b>Assigned</b>	Project: Accessible Book, Part 3



### Week 4 2/13

<b>Discussion</b>	Accessible Book, Part 3 Reflection
<b>Lecture</b>	Typography on the Web Responsive Design
<b>Demo</b>	CSS: Fluid Units, Media Queries
<b>Assigned</b>	Project: Accessible Book, Part 4

### Week 5 2/20

<b>Discussion</b>	Accessible Book, Part 4 Reflection
<b>Lecture</b>	Layout on the Web A11ty Checklist
<b>Demo</b>	CSS: The Box Model, Flexbox
<b>Assigned</b>	Project: Accessible Book, Part 5

### Week 6 2/27

 <b>Crit</b> 	<b>Project 1: Accessible Book Presentation</b>
<b>Lecture</b>	Inputs & Outputs The User
<b>Demo</b>	CSS: Hovering & Interaction Figma Overview



**Assigned** Project: Generative Tool, Part 1

### Week 7 3/5

**Discussion** Reading Reflection  
Generative Tool, Part 1 Reflection

**Lecture** Intro to JavaScript

**Demo** JavaScript: Basics  
Prototyping in Figma

**Assigned** Project: Generative Tool, Part 2

### Week 8 3/12

**Discussion** Generative Tool, Part 2 Reflection

**Lecture** Generative & Parametric Design

**Demo** JavaScript: DOM Manipulation

**Assigned** Project: Generative Tool, Part 3  
Class Admin: Midterm Evaluation Survey

 **SPRING BREAK 3/19** 

### Week 9 3/26

**1:1s** Midterm Evaluations

**Lecture** Dark Patterns

**Demo** Functions & Inputs

**Assigned** Project: Generative Tool, Part 4

### Week 10 4/2

<b>Discussion</b>	Generative Tool, Part 4 Reflection
<b>Lecture</b>	User Testing & Feedback Consentful Interface
<b>Demo</b>	JavaScript: Conditionals & Events
<b>Assigned</b>	Project: Generative Tool, Part 5

#### Week 11 4/9



**Crit**

#### **Project 2: Generative Tool Presentation**

<b>Lecture</b>	Data as Input / Data as Material
<b>Demo</b>	None
<b>Assigned</b>	Project: Experimental Clock, Part 1

#### Week 12 4/16

<b>Discussion</b>	Experimental Clock, Part 1 Reflection
<b>Lecture</b>	Visualizing Time
<b>Demo</b>	JavaScript: Date & Data Methods
<b>Assigned</b>	Project: Experimental Clock, Part 2

#### Week 13 4/23

<b>Discussion</b>	Experimental Clock, Part 2 Reflection
<b>Lecture</b>	Data Portraits & Critical Code
<b>Demo</b>	JavaScript: Mapping Values
<b>Assigned</b>	Project: Experimental Clock, Part 3

#### Week 14 4/30

<b>Discussion</b>	Experimental Clock, Part 3 Reflection
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<b>Lecture</b>	Data Structure & Data Feminism
<b>Demo</b>	JavaScript: Loops
<b>Assigned</b>	Project: Experimental Clock, Part 4

## Week 15 5/7



**Crit**



### Project 3: Experimental Clock Presentation

<b>Lecture</b>	Reflection on the Semester What's Next?
<b>Demo</b>	JavaScript: Wildcard
<b>Assigned</b>	Course Evaluation

## Class Policies

### Community Agreements

On the first day of class, we will collectively write and agree upon a code of conduct for our group. This agreement is intended to help us create and maintain a safe, empathetic, and productive space for our course.

It will live on our course site and can be revised and modified, with all of our input, over the semester.

### Statement of Inclusion

The School of the Art supports inclusive and accessible learning environments where diverse perspectives are recognized, respected, and seen as a source of strength. The school is enriched and enhanced by diversity, including race, ethnicity and national origins, gender and gender identity, sexuality, socio-economic class, age, religion and disability. The SoA expects every member of the community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. Every student has a right to learn in an environment free of harassment, sexual misconduct, or discrimination.

As an instructor of this class, we will uphold these values: it is our intent that students from all diverse backgrounds and perspectives be well-served by this course, that students'

learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. As an instructor of this class, I intend to foster an environment of trust and safety in the classroom so that each student will be able to hear and respect each other along with the different perspectives and worldviews expressed in class. It is our intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture.

Your suggestions on any of the above are encouraged and appreciated. Some of the material in this course may evoke strong emotions; please be respectful of others' emotions and be mindful of your own. Please let us know if something said or done in the classroom, by either ourselves or other students, is particularly troubling or causes discomfort or offense. While the intention may not be to cause discomfort or offense, this kind of impact should not be ignored and is something that I take seriously and deserves attention.

### **Accommodations**

The Cooper Union makes reasonable accommodations and modifications to policies, practices, and procedures to meet the needs of students with disabilities on campus. Students with disabilities seeking any accommodations regarding any aspect of the full Cooper Union experience—including anything pertaining uniquely to one of the Cooper Union's distinct schools—are expected to contact the Office of Student Care and Support to formally register their accommodations requests, demonstrate self-advocacy, and responsibly engage in their learning. Questions about disability and medical support should be sent to [disability@cooper.edu](mailto:disability@cooper.edu). The Director of Student Care and Support oversees the student disability and medical accommodation and support processes. For more information visit: <https://cooper.edu/students/student-affairs/disability>.

### **Sexual Misconduct and Discrimination Reporting Requirements**

While we want you to feel comfortable coming to us with issues you may be struggling with or concerns you may be having, please be aware that we have some reporting requirements that are part of our responsibilities as a member of the faculty. If you inform us of an issue of sexual harassment, sexual assault, or discrimination, we will keep the information as private as we can, but we are required to report the basic facts of the incident to Cooper's Title IX Coordinator, Grace Kendall. If you would like to speak to the coordinator directly, she can be reached at [gkendall@cooper.edu](mailto:gkendall@cooper.edu), 212-353-4053, or in person on the 3rd floor of the residence hall (29 3rd Avenue). The Title IX Coordinator will be able to assist you in understanding all of your options and in connecting

you to available resources on and off-campus. Remember that speaking with the Title IX Coordinator does not obligate you to file a complaint or participate in an investigation unless you choose to do so.

To speak with someone confidentially about issues of sexual misconduct, you may contact the Student Care Coordinator and Counselor, Cassandra Jolicoeur at [jolicoeu@cooper.edu](mailto:jolicoeu@cooper.edu), 212-353-4006, or in person on the 3rd floor of the residence hall (29 3rd Avenue). For on-campus confidential support, see counseling below. Off-campus confidential support for sexual violence is available through the Safe Horizon Crisis Center (212-577-7700) or the RAINN hotline (877-995-5247). For more information: <https://cooper.edu/students/student-affairs/sexual-misconduct>.

### **Counseling and Mental Health Support**

Counseling and Mental Health Support at The Cooper Union are coordinated through the Office of Student Affairs. The Student Care Coordinator and Counselor Cassandra Jolicoeur meets with students to provide support and to discuss mental health and counseling needs. Cassandra can be reached at [jolicoeu@cooper.edu](mailto:jolicoeu@cooper.edu) or at 212.353.4006. See this link for more detailed information: [Counseling and Mental Health Services | The Cooper Union](#).