

CS 571 Building User Interfaces

# Course Introduction

Prof. Yuhang Zhao  
Computer Sciences, UW-Madison

# Instructor: Yuhang Zhao

- Assistant Professor of Computer Sciences
  - PhD, 2020, Cornell Tech, Cornell University
- Research direction
  - HCI, Accessibility, AR/VR, mobile interaction
- Mad Ability Lab
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- Contact
  - Email: [yuhang.zhao@cs.wisc.edu](mailto:yuhang.zhao@cs.wisc.edu)







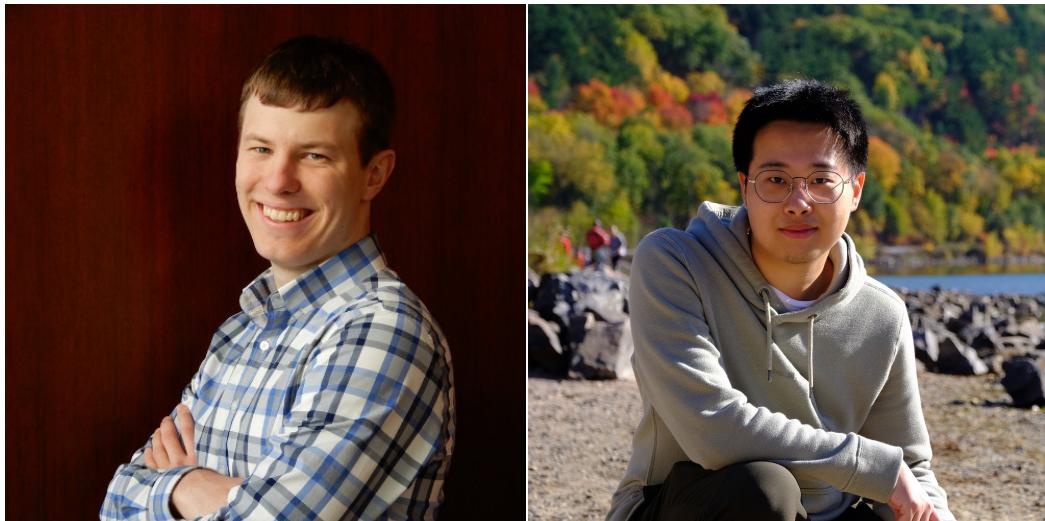




# Instructional Team

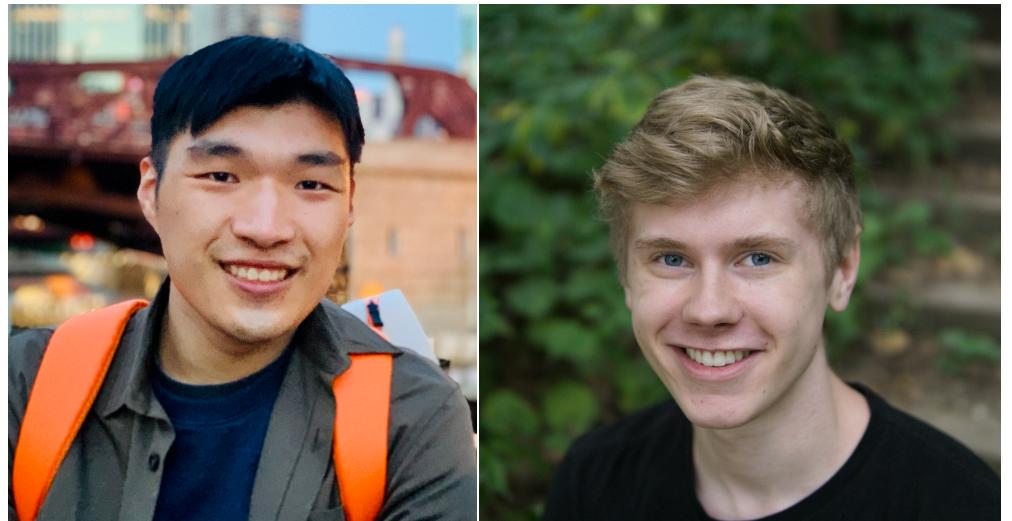
## TAs

Brandon Cegelski, Ru Wang



## Peer Mentors

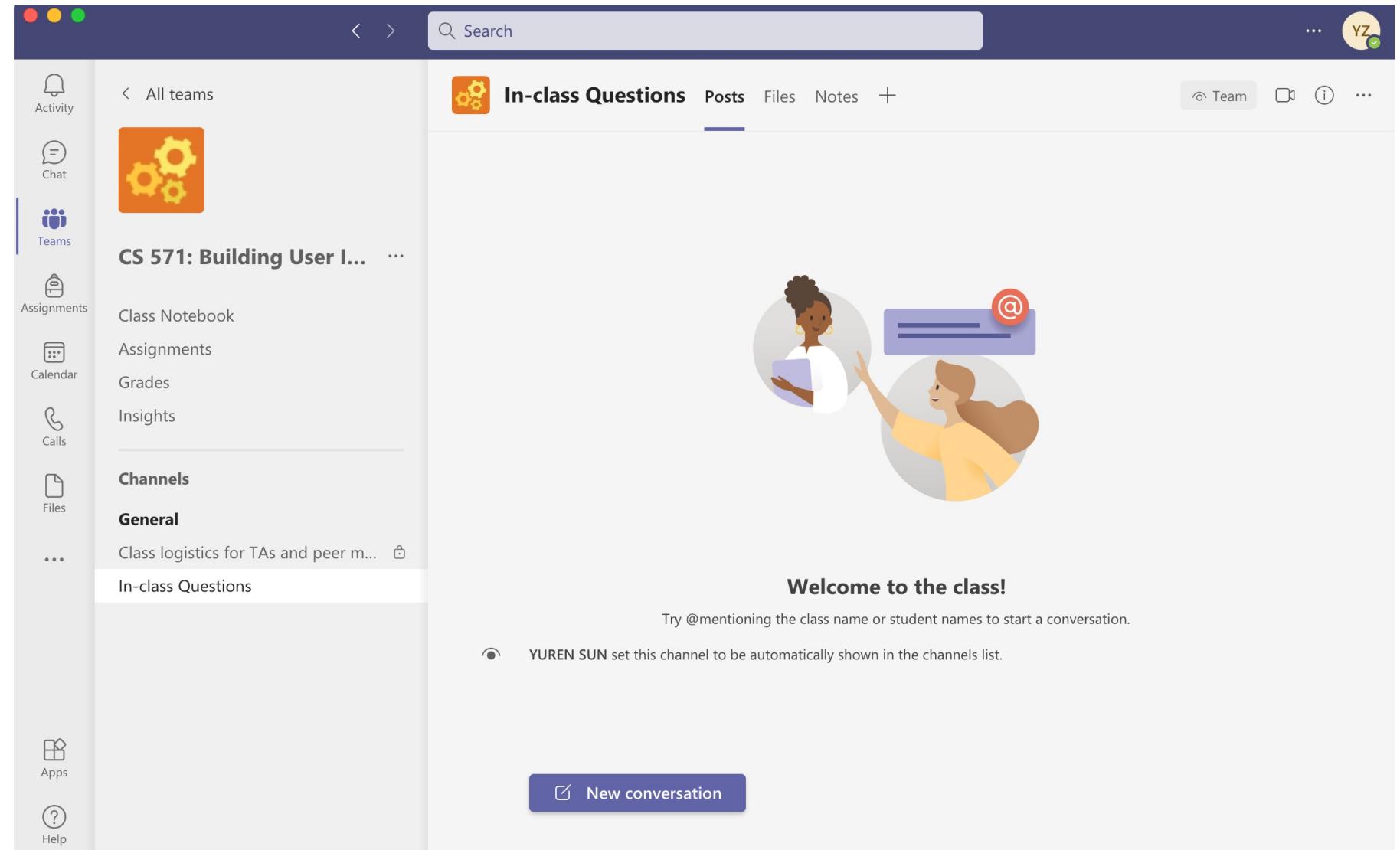
Ilkyu Ju, Nick Winans



# Live Q&A

## Microsoft Teams

Join Code: **i5v4dwf**. Click  
*Create and join teams*  
below your teams list  
and look for the *Join a  
team with a code card*.



The screenshot shows the Microsoft Teams desktop application. On the left, the sidebar includes icons for Activity, Chat, Teams (highlighted), Assignments, Calendar, Calls, Files, and Help. The main area displays the 'In-class Questions' channel for the team 'CS 571: Building User I...'. The channel header has tabs for In-class Questions, Posts, Files, Notes, and a plus sign. Below the header, there's a welcome message: 'Welcome to the class! Try @mentioning the class name or student names to start a conversation.' A note indicates that 'YUREN SUN set this channel to be automatically shown in the channels list.' At the bottom right of the channel view is a 'New conversation' button.

What is this course about?

# UX Development

But, what is *UX development*?

# FRONTEND DEVELOPMENT

(in 2 min)



The realm of the UX developer exists somewhere between that of the *traditional developer* and the *designer*. We're not really designers, yet to be a good UX developer you certainly need to have an eye for design. In the same vein, we're not traditional developers but we certainly need to have development experience and expertise. Often this experience spans multiple technologies, languages, and platforms.

– [Tim R. Todish](#)

It falls on the UX developer to bridge the gap between design and technology. We need to be able to think and speak the language of designers. It's our job to help translate their vision to the development team in a way that they can understand and accept. This can be a critical piece of the puzzle in a project, especially if the design and the interactions behind it are complex.

— [Tim R. Todish](#)

Similarly, we need to speak on behalf the developers to help reign in the designers, at times. If they are coming up with concepts that will be extremely difficult or time consuming to implement, we can explain the limitations of the technology and the complexity involved in implementing their designs, and try to come up with an acceptable alternative.

— [Tim R. Todish](#)

UX Development →  
software engineering + UX design

What does a **software engineer** do?

A close-up photograph of a man with short brown hair and glasses, wearing a dark green t-shirt. He is holding a large, orange plastic cup with both hands and is in the middle of taking a drink. The cup appears to be filled with a dark liquid, possibly soda or beer. The background is slightly blurred, showing what might be a window or a door.

which is devoured in a  
large quantity.

**Definition:** A software engineer is a person who applies the principles of software engineering to the design, development, maintenance, testing, and evaluation of computer software.

What are the *principles* of software engineering?

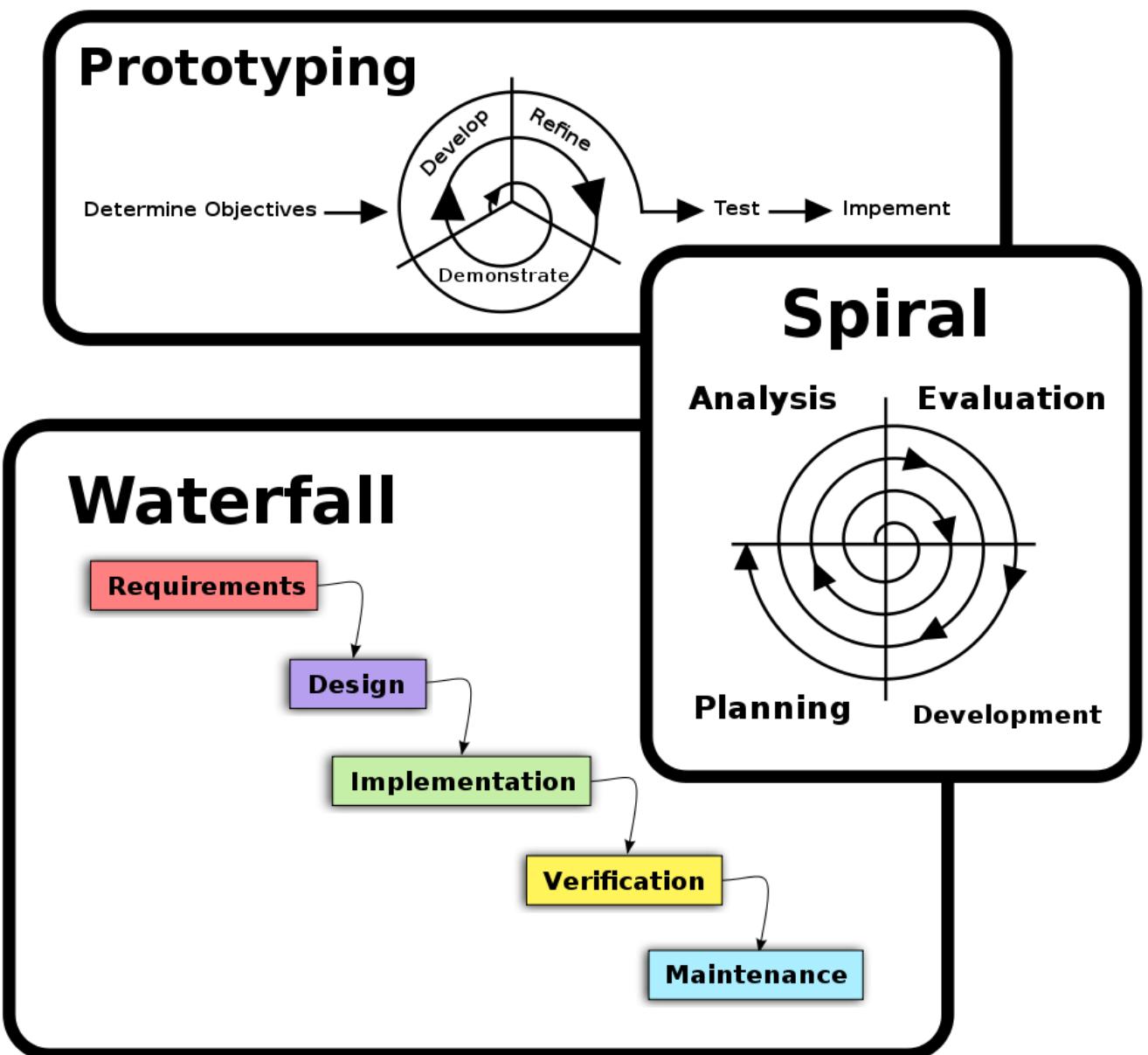
[Wikipedia: Software engineer](#)

*Pro Tip:* Principles of software engineering include:

1. Separation of concerns
2. Modularity
3. Abstraction
4. Anticipation of change
5. Generality
6. Incremental development
7. Consistency

[Principles of software engineering](#)

# Software development process



[Wikipedia: Software development process](#)

What does a **UX designer** do?



**Definition:** User experience (UX) design is the process that design teams use to create products that provide meaningful and relevant experiences to users.

A *UX designer* is concerned with the entire process of acquiring and integrating a product, including aspects of branding, design, usability, and function.

What does this *process* involve? Can anyone name a step?

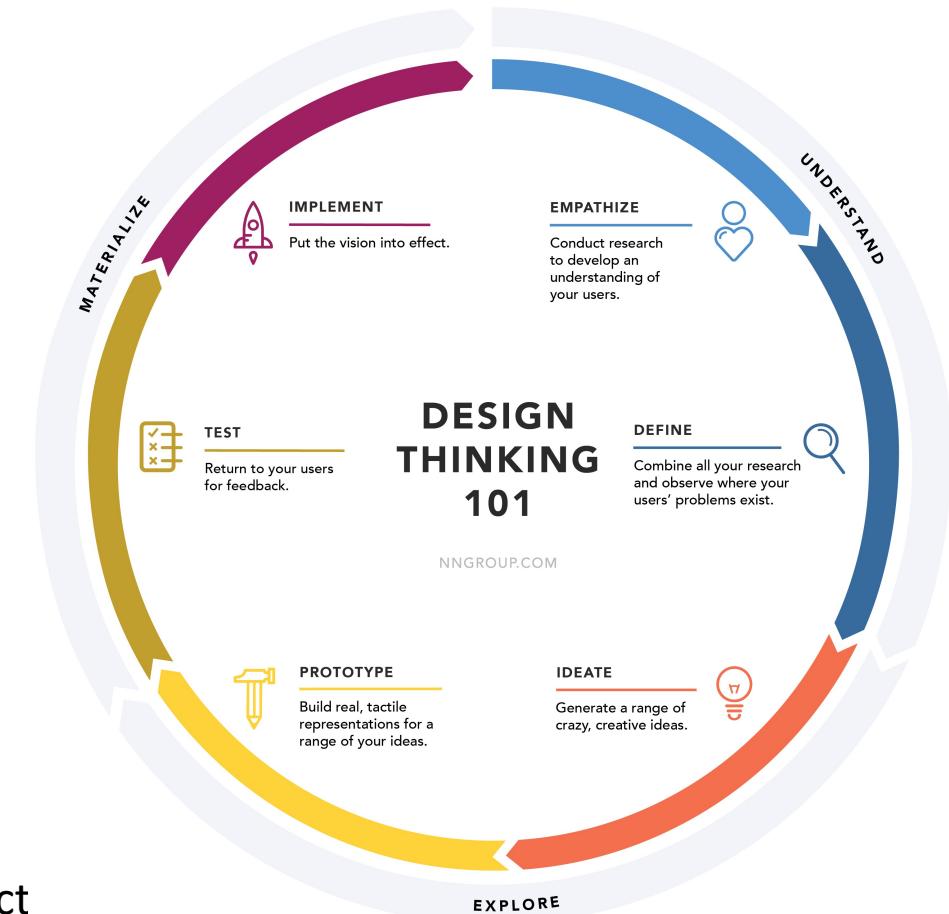
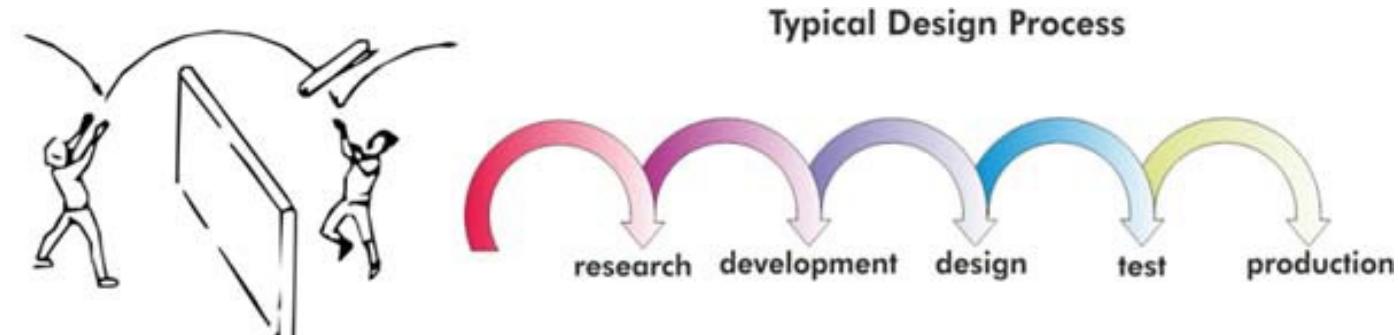
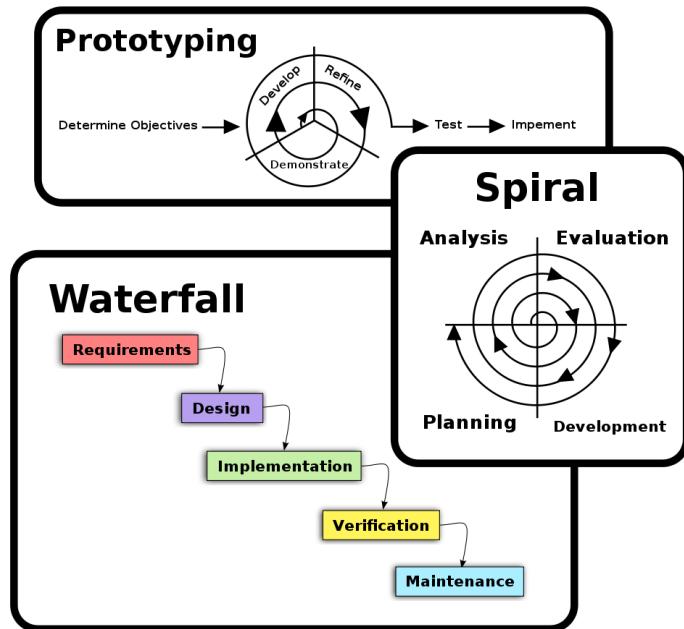
*Pro Tip:* UX design usually involves the steps:

1. Empathize
2. Define
3. Ideate
4. Prototype
5. Test
6. Implement

Wait a minute! Some of these steps sound familiar!

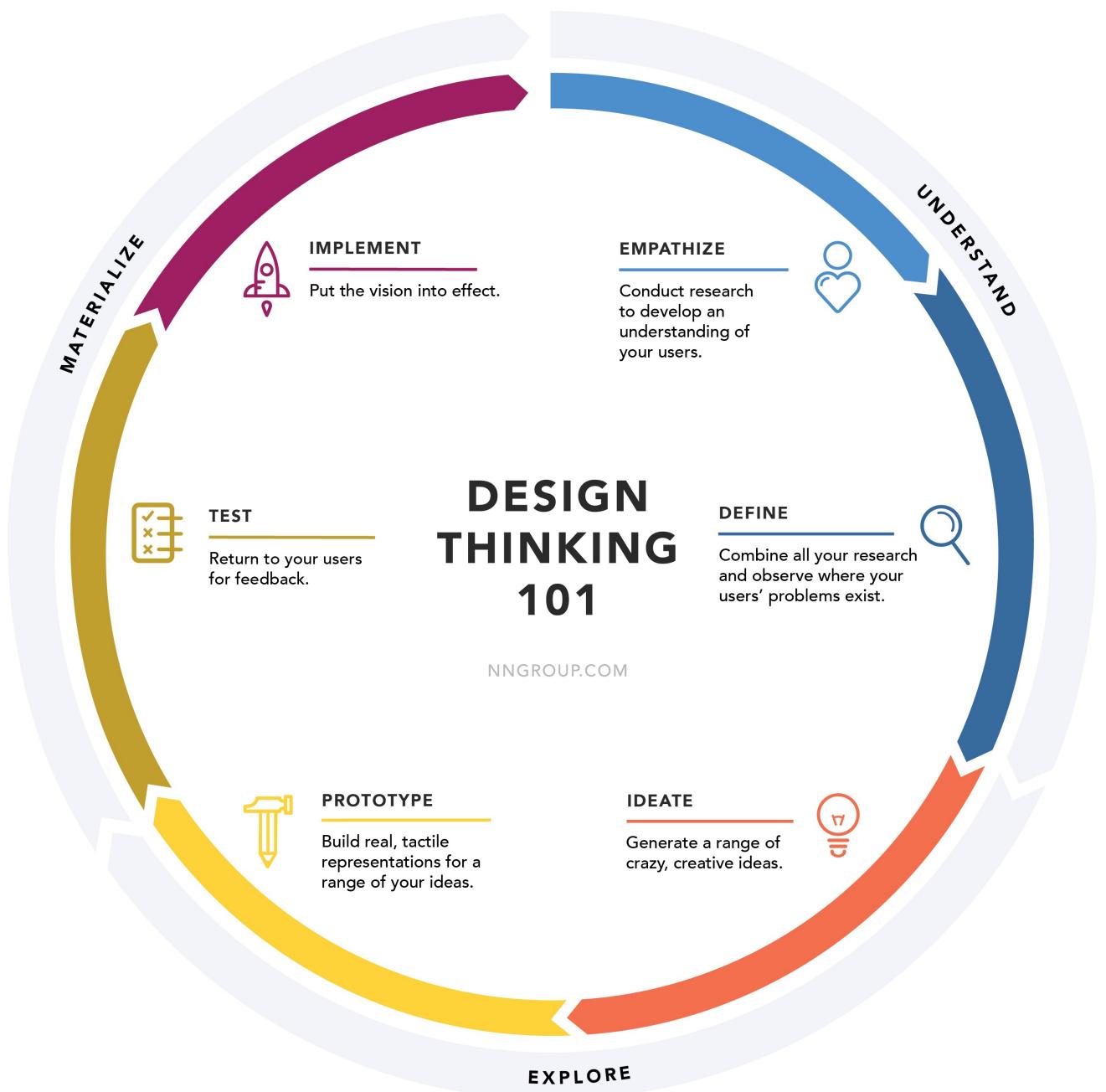
[NN/g Design Thinking](#)

# Design process sources



[Reed & Bohemia, 2011, NN/g Design Thinking](#)

# A Process for UX Development



# UX Development Trajectories

- One-person development team to build full-stack applications
- A developer who speaks the language of the designers
- A designer who can also build native prototypes
- A bridge/translator between designers and developers in large/complex organizations

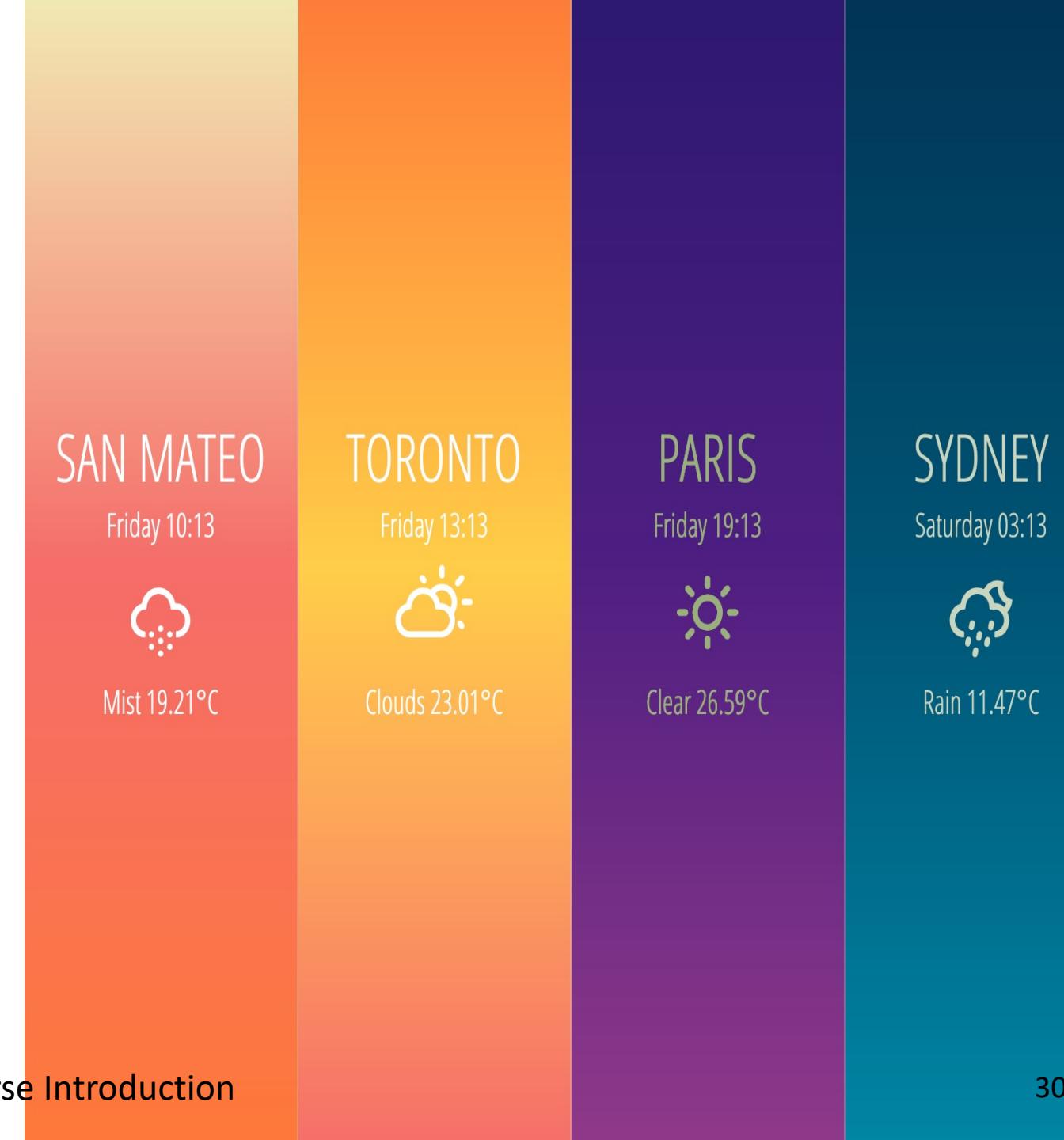


Videos: [1](#), [2](#), [3](#), [4](#)

Ok, 🤞, but what can I do as a UX developer?

# Example 1: Clocks

- [Binary clock](#)
- [World clock](#)



[React Examples](#)

# Example 2: Musical Instruments

- Xylophone
- Electric guitar



[CSS Tricks: Introduction to Web Audio API](#)

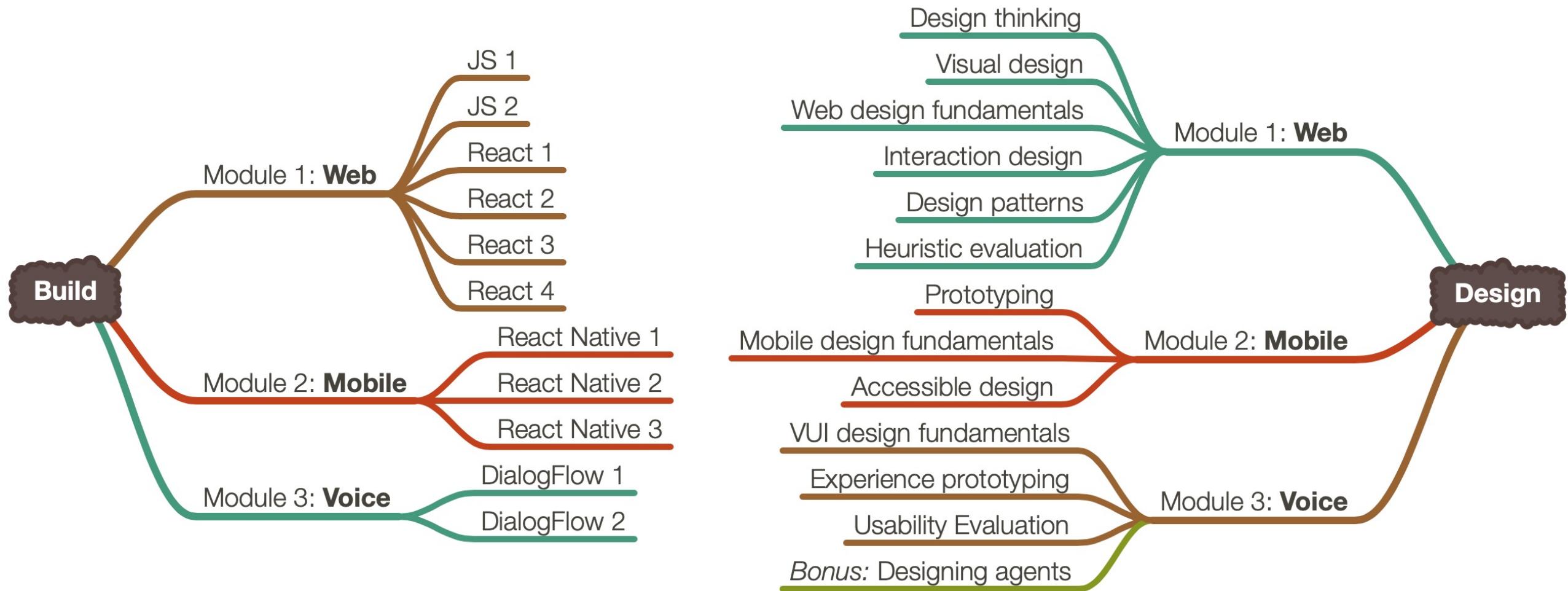
Building User Interfaces | Yuhang Zhao | Week 01: Course Introduction

Questions about the **Course Topic**?

# Course Mechanics and Logistics



Image sources: [left](#), [right](#)



# Build

- We will learn the most popular implementation frameworks/libraries for each platform:
  1. Web—*JavaScript, React*
  2. Mobile—*React Native*
  3. Voice—*DialogFlow*

Mostly introductory, but these will get you started.

This is a 500-level class, so there will be a lot of self-exploration!

# Design

- We will learn design methods and techniques that will give you the best bang for the buck. Examples:
  1. **Week 3:** How to empathize with your users using think-aloud
  2. **Week 7:** How to use existing design patterns to improve UX
  3. **Week 11:** How to improve the accessibility of your designs

# How they are put together

- Across three modules—web, mobile, voice—we will work on individual projects where you will incrementally and iteratively design and build user interfaces.

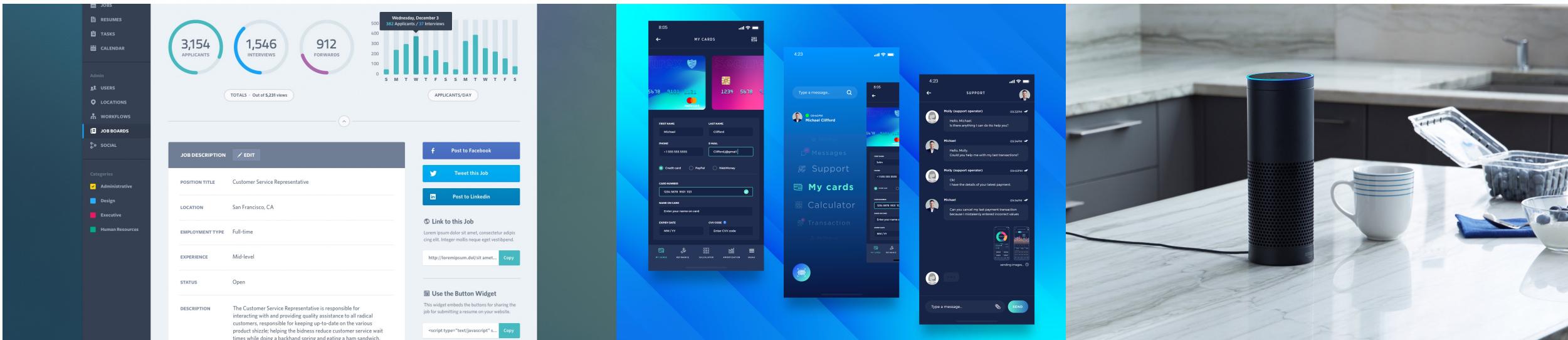


Image sources: [left](#), [center](#), [right](#)

# The Anatomy of a Module

- Two weeks of building
- Two weeks of design
- Build assignment (Alpha) + Design assignment (Beta)

February 15	React 1	February 17	React 2
February 22	React 3	February 24	React 4
March 1	Web Design	March 3	Interaction Design
March 8	Design Patterns	March 10	Heuristic Evaluation

## Course schedule

# Participation

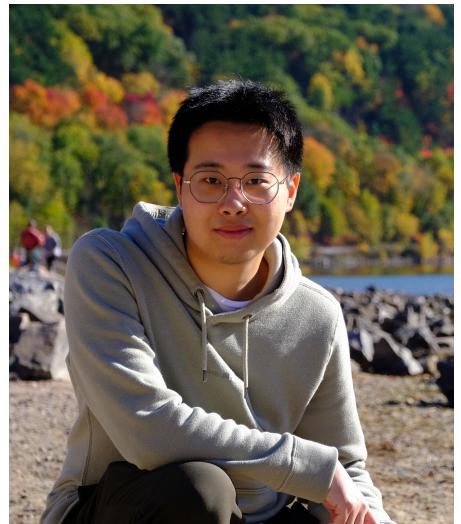
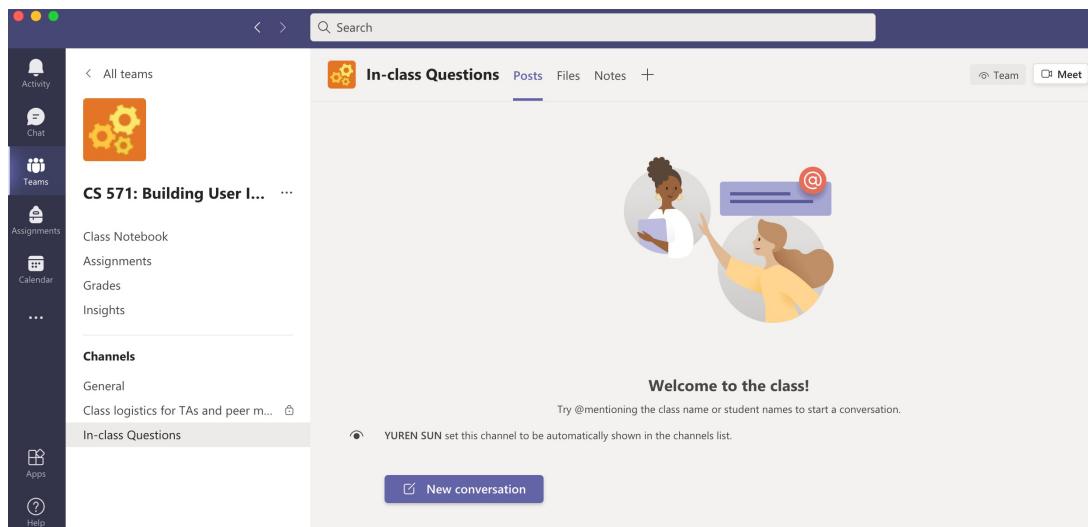
In-person class, TR 11:00-12:15 pm, Noland 168

Additional resources:

Online, async: through recorded lectures (posted by 9pm on day of lecture)

# Communication

- Q&A in class: Live Q&A on Microsoft Teams
- Office hours: Microsoft Teams
- Assignment questions: Piazza
- Personal questions: email



# Grading

Assignment	Points
Weekly assignments	50
Midterm 1	20
Midterm 2	20
Quizzes	10
<b>Total</b>	<b>100</b>

# Assessments

- Incremental module deliverables –  $\alpha, \beta$
- Midterms
  - Alternative exam dates for midterm
  - Contact TA to schedule alternative exam time for accommodation or other special cases
- In-class quizzes
  - Has to be completed within 24 hours after class

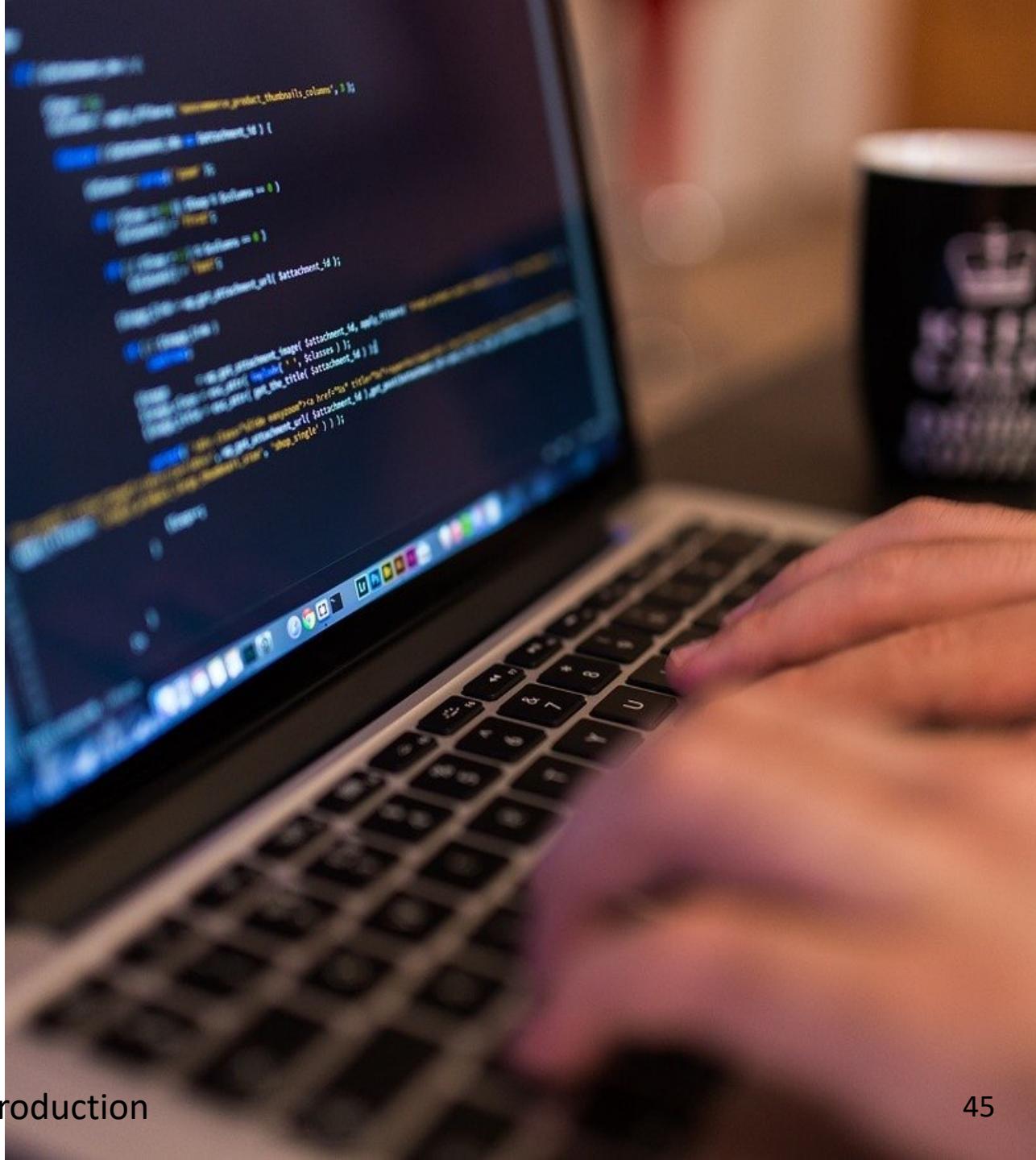
# Systems we will use

- Course website for content (syllabus, lectures)
- Canvas to share/submit assignment
- Microsoft Teams for Live Q&A in class, office hours
  - Join Code: **i5v4dwf**. Click *Create and join teams* below your teams list and look for the *Join a team with a code card*.
- Piazza for Q&A
- Canvas for quizzes

The screenshot shows the homepage of the CS-571 course website. The header includes the course name "CS-571" and a search bar. A sidebar on the left lists navigation links: Home (which is highlighted in blue), Schedule, Syllabus, Instructional Team, Office Hours, Course Policies, Technology Requirements, and Packages. The main content area features a welcome message: "Welcome to CS-571 Building User Interfaces". Below it is a section titled "What is this class about?" with a brief description: "This class aims to introduce CS undergraduates to the wonderful world of User Experience (UX) development." To the right of the text is a colorful illustration of four people working together on a large computer monitor, representing UX development. At the bottom of the page, there is a footer note: "This site uses Just the Docs, a documentation theme for Jekyll." and a link to "actual UX developer::".

# Office hours

You will have a lot of help through discussion sessions and office hours



[Image source](#)

# Discussion sessions

- Wednesday 5:00 – 7:00 pm
  - Ru or Ilkyu
- Thursday 5:00 – 7:00 pm
  - Brandon or Nick
- Each session can host around 20 students
  - Students can discuss with each other
  - TA or peer mentors will be there to answer questions
  - But, assignments need to be completed ***independently***

- Locations
  - CS 1263
  - Feb 23, Wednesday: Noland 553
  - Mar 30, Wednesday: Noland 553
- Discussion session will start from next week
- Registration form
  - Add your name, netID, and the questions you want to ask
  - 20 students per session
  - [Form](#)

# Office hour links

- Monday
  - [1:30 – 3:00 pm Nick](#)
- Tuesday
  - [4:00 – 5:00 pm Prof Zhao](#)
  - [5:00 – 6:30 pm Ilkyu](#)
- Wednesday
  - [10:30 am-12:00 pm Brandon](#)
  - 5:00 – 7:00 pm Discussion session
- Thursday
  - [3:00 – 4:30 pm Ru](#)
  - 5:00 – 7:00 pm Discussion session
- Friday
  - [9:00 – 10:30 am Ru](#)
  - [10:30 am – 12:00 pm Nick](#)
  - [2:30 – 4:00 pm Ilkyu](#)
  - [4:00 – 5:30 pm Brandon](#)

# Policies

- **Grace days:** *Four* grace days that you can use to give yourself extra time without penalty. Individual assignments only (not including quizzes). After using up the grace days, late policy will be applied.
- **Late Policy:** Assignments submitted by 11:59 pm on the date of the deadline will receive full marks. For each assignment, 20% of the total grade for that assignment will be removed for each day that the assignment is late. Submissions that are 5+ days late will receive no marks.
- **Quizzes:** 5 quiz questions will be dropped when calculating final grade

# Who to talk to about what?

- Grading questions → Brandon, Ru
- Assignment submission, technical questions → Ilkyu, Ru
- Programming or design questions → everyone!
- Personal questions; exceptions & emergencies, career, grad school, portfolio advice → Professor Zhao

# Questions about Course Mechanics?

# What's next?

- We'll hit the ground running this Thursday with the first build lecture: Javascript 1: An Introduction
- No class next Tuesday (Lunar new year!)
- Review the course website and meet [technology requirements](#)
- Brush up on some basics: [HTML](#) + [CSS](#) + [Git/GitHub](#)