



CS571: Building User Interfaces

Spring 2023 | Tu, Th 4:00pm – 5:15 pm | Ingraham 19 | cs571.org

A three-credit undergraduate course in the Department of Computer Sciences at UW-Madison. Lectures are held in-person while recordings are posted online. In-class participation is encouraged but not mandatory. **CS400 is a pre-requisite for this course.** Students are expected to have a solid foundation in computer science and programming before taking this course.

Course Description

Introduces software development of user interfaces (UIs). Build competence in implementing UIs using state-of-the-art (1) UI paradigms, such as event-driven interfaces, direct-manipulation interfaces, and dialogue-based interaction; (2) methods for capturing, interpreting, and responding to different forms of user input and states, including pointing, text entry, speech, touch, gestures, user activity, context, and physiological states; and (3) platform-specific UI development APIs, frameworks, and toolkits for multiple platforms including web/mobile/desktop interfaces, natural user interfaces, and voice user interfaces. Learn about the fundamental concepts, technologies, algorithms, and methods in building user interfaces, implement UIs using of state-of-the-art UI development tools, and build a UI development portfolio.

Course Learning Outcomes (CLOs):

- Program front-end, user-facing software elements using the state-of-the-art programming languages, frameworks, and libraries.
- Engage in design thinking around user interface needs and problems, ideate and communicate conceptual design solutions
- Prototype and develop user interfaces for the web, mobile, and voice user interfaces (VUIs)
- Follow user-centered design principles, heuristics, and methods to iteratively build, assess, and refine design solutions
- Create visual designs, layouts, and navigation structures, and effectively use design languages, color palettes, and platform-specific design elements

How Credit Hours are Met by the Course

This class meets for two 75-minute class periods each week over the semester and carries the expectation that students will work on course learning activities (reading, writing, projects, studying, quizzes, etc.) for about 3 hours out of classroom for every class period. The syllabus includes more information about meeting times and expectations for student work.

Course Schedule

The course schedule is made up of lectures on both implementation and fundamental design/HCI topics. Lectures on implementation typically happens on Tuesdays, and lectures on fundamental design/HCI topics typically happens on Thursdays. Two weeks of the semester will be used for implementation “bootcamps” – deep-dives into JavaScript and React.

Week Of	Topics	Homework	Quiz
23-Jan	Intro & Design Thinking	HW1	Quiz A
30-Jan	JavaScript Bootcamp (JS1 & JS2)	HW2	Quiz B
6-Feb	JS3 & Web/Interaction Design	HW3	Quiz C
13-Feb	React Bootcamp (R1 & R2)	HW4	Quiz D
20-Feb	React 3 & Visual Design	HW5	Quiz E
27-Feb	React 4 & Expert Evaluation	HW6	Quiz F
6-Mar	React 5 & Midterm Exam	No HW	No Quiz
13-Mar	Spring Break!	No HW	No Quiz
20-Mar	React Native 1 & Mobile Design	HW7	Quiz G
27-Mar	React Native 2 & Design Patterns	HW8	Quiz H
3-Apr	React Native 3 & Prototyping	HW9	Quiz I
10-Apr	React Native 4 & Accessibility	HW10	Quiz J
17-Apr	DialogFlow 1 & VUI Design/Exp. Prototyping	HW11	Quiz K
24-Apr	DialogFlow 2 & Agent Design/Usability Eval.	HW12	Quiz L
1-May	Building Secure UIs & Fullstack Dev	No HW	No Quiz
8-May	Final Exam	No HW	No Quiz

Instructional Staff

Office hours may be held in-person or via Zoom. For Zoom office hours, please see Canvas.

Instructor Cole Nelson – *just call me Cole :)*

ctnelson2@wisc.edu

Friday 2:00-5:00 pm via Zoom

Other office hours by request

TA Hongtao Hao

hongtaoh@cs.wisc.edu

Monday 4:00-6:00 pm in CS3239

Wednesday 4:00-6:00 pm in CS3239

TA Amy Koike

ekoike@wisc.edu

Monday 8:00-10:00 am in CS3331

Tuesday 8:00-10:00 am in CS3331

TA Yishen Sun

yishen.sun@wisc.edu

Monday 9:30-11:30 am via Zoom

Thursday 1:00-3:00 pm in CS3247

Grading

Students will be graded on a set of individual weekly assignments and quizzes, the discovery and usage of an external library, a midterm exam, and a final exam. The points are distributed as such...

Item	Points	Notes
Weekly Assignments	52	12 HWs, 5 pts each. HWs 1 and 7 are only worth 1 pt.
Weekly Quizzes	11	12 quizzes, 1 pt each. Your lowest quiz is dropped.
Library Usage	2	Use of an external dependency from npm .
Midterm Exam	15	Students may use a <i>single-sided</i> notesheet.
Final Exam	20	Cumulative. Students may use a <i>double-sided</i> notesheet.

Exams will be held in-person. If a student cannot make the exam, an alternative exam proctored through Canvas and HonorLock may be requested >1 week in advance. Students' lowest quiz will be dropped, though no weekly assignments will be dropped. Weekly assignments can be submitted up to one week late for 50% of the original points, though the first two late assignments can be submitted up to one week late at no penalty. Quizzes may not be submitted late. Grades are assigned using the following scoring system...

Grade	A	AB	B	BC	C	D	F
Range	[100, 93]	(93, 88]	(88, 80]	(80, 75]	(75, 70]	(70, 60]	(60, 0]

There is no rounding of grades.

Course Tools

Quizzes will be completed via *Canvas*. Assignments will be submitted via *GitHub Classroom*. Questions will be asked via *Piazza*. Personal matters will be handled via *email*.

Course Materials

There is no required textbook for this course. The instructional content for the class is curated from different books, articles, and multimedia resources. All reading and multimedia material will be provided through Canvas directly to PDFs or links to archives or multimedia resources (e.g., YouTube). Similarly, information and tutorials on all necessary tools and software will be provided on Canvas.

Students are expected to download & install the following (free) software: [VSCode](#), [NodeJS 18 with NPM 8](#), [Postman](#), and [Git](#).

Other Course Policies

Students with special needs should inform the instructor immediately via email so that accommodations can be made. Let the instructor know well in advance if an assignment, deadline, or major project milestone interferes with an important religious or cultural observance/event.

Rules, Rights, and Responsibilities

See the Guide's to Rules, Rights and Responsibilities at <http://guide.wisc.edu/undergraduate/#rulesrightsandresponsibilitiestext>

Academic Integrity

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to <https://conduct.students.wisc.edu/academic-integrity/>

All inclusions of code inspired by, generated from, or copied from StackOverflow, ChatGPT, or any online sources *must* be annotated with a comment of its origin. Students may *not* share their code with others or use code from students submitted in previous semesters.

Course Evaluations

Students will be provided with an opportunity to evaluate their enrolled courses and their learning experience. Student participation is an integral component of course development, and confidential feedback is important to the institution. UW-Madison strongly encourages student participation in course evaluations.

Diversity & Inclusion

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

Accommodations for Students with Disabilities

McBurney Disability Resource Center syllabus statement: The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform the instructor of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. The instructor will work either directly with the student or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. In addition to completing an electronic Faculty Notification Letter request through McBurney Connect, it is important for students to contact the course instructor directly by the end of the third week of the semester to set up a meeting to discuss implementation of any necessary accommodations. This early communication helps ensure that accommodations can be implemented in a timely manner. For example, if an alternative exam room is needed, arrangements must be made well in advance of an exam date to ensure room availability and to secure a room booking.

<https://mcburney.wisc.edu>

Additional Disability Statement

In addition to completing an electronic Faculty Notification Letter request through McBurney Connect, it is important for students to contact the course instructor directly by the end of the third week of the semester to set up a meeting to discuss implementation of any necessary accommodations. This early communication helps ensure that accommodations can be implemented in a timely manner. For example, if an alternative exam room is needed, arrangements must be made well in advance of an exam date to ensure room availability and to secure a room booking.

Mental Health

UHS provides no-cost mental health services including individual, couple/partner, group counseling, outreach programming, and stress management. UHS also offer 24/7 crisis services. Psychiatry services are also available for medication management. If at any time you are feeling unsafe, dial 608-265-5600 option 9 or dial 911.