CS571: Building User Interfaces | Spring 2024

cs571.org

Section 001 | Tu, Th 9:30 am – 10:45 am | 270 Soils
Section 002 | Tu, Th 11:00 am – 12:15 pm | 1220 Microbial Sciences

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 and mandatory for all design lectures as there is an associated in-class activity.

CS400 is a prerequisite 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 happen on Tuesdays, and lectures on fundamental design/HCI topics typically happen on Thursdays. The course schedule below is tentative and subject to change.

Week Of	Topics	Homework	ICAs
22-Jan	Intro to CS571 & Design Thinking	HW0 (1 pt)	ICA A
29-Jan	Web Dev Basics 1 & Web Dev Basics 2	HW1	No ICA
5-Fen	Web Dev Basics 3 & Visual Design	HW2	ICA B
12-Feb	Web Dev 1 & Web Design	HW3	ICA C
19-Feb	Web Dev 2 & Interaction Design	HW4	ICA D
26-Feb	Web Dev 3 & Expert Evaluation	HW5	ICA E
4-Mar	Web Dev 4 & Accessibility	HW6	ICA F
11-Mar	Web Dev 5 & **Midterm Exam**	No HW	No ICA
18-Mar	Mobile Dev 1 & Prototyping	HW7 (2 pts)	ICA G
25-Mar	Spring Break!	No HW	No ICA
1-Apr	Mobile Dev 2 & Mobile Design	HW8	ICA H
8-Apr	Mobile Dev 3 & VUI Design/Exp Prototyping	HW9	ICA I
15-Apr	Speech Dev 1 & Designing Agents	HW10	ICA J
22-Apr	Speech Dev 2 & User Evaluation	HW11	ICA K
29-Apr	FullStack Development & Professor's Choice	HW12 (2 pts)	ICA L
10-May	**Final Exam**	No HW	No ICA

Instructional Staff

Office hours may be held in-person or via Zoom. Please see Canvas for further office hours information.

Instructor	Cole Nelson	ctnelson2@wisc.edu
TA	Hongtao Hao	hongtaoh@cs.wisc.edu
TA	Amy Koike	ekoike@wisc.edu
TA	Leo Cui	lzcui@wisc.edu
TA	Suhas Kurukuri	kurukuri@wisc.edu
Peer Mentor	Wai Linn	
Peer Mentor	Josh Charpentier	
Peer Mentor	Jerry Yu	
Peer Mentor	Catherine Tan	
Peer Mentor	Rainy Jin	
Peer Mentor	Kruthiventi Nikhil	
Peer Mentor	Zhaoyang Liu	

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	45	13 HWs, 4 pts each. HWs 0, 7, and 12 worth fewer points.
Weekly In-Class Activities (ICAs)	10	12 ICAs, 1 pt each. Two lowest dropped.
Midterm Exam	20	Students may use a *double-sided* notesheet.
Final Exam	25	Cumulative. Students may use a *double-sided* notesheet.

Exams will be held in-person.

Students have a total of 10 late days that can be used throughout the semester. When all 10 late days are depleted, each day late will be 10% off that assignment's grade. At most 7 late days can be used on any single assignment. No assignment can be turned in >7 days late. Days late are rounded up to the nearest whole number – e.g. an assignment turned in at 12:01 am will use a late day. In-Class Activities may not be submitted late. Grades are assigned using the following scoring system…

Grade	A	AB	B	BC	C	D	F
Range	[100, 94]	(94, 88]	(88, 82]	(82, 76]	(76, 70]	(70, 60]	(60, 0]

There is no rounding of grades.

Course Tools

In-Class Activities will be uploaded 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 20 with NPM 10, 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

Generative AI & Academic Integrity

Assignment descriptions should be treated like proprietary company information – they should not be pasted into any generative AI tool. Instead, generative AI should be used as a personal tutor – a good point of reference to understand a function or explore a concept deeper, but not to complete your homework for you. Additionally, all code generated by or copied from StackOverflow, ChatGPT, GitHub Copilot, or any other online sources *must* be annotated with a comment of its origin. Finally, students may *not* share their code with others or use code from students submitted in previous semesters.

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/

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 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.

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.

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.

Mental Health

UHS provides no-cost mental health services including individual, couple/partner, group counseling, outreach programming, and stress management. UHS also offers 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.

Laptop Lending Program

The CSL now has Windows laptops available for lending to students who do not have an appropriate computer for a CS class. Loans can be for a short duration (while the student's laptop is being repaired, for example) or for the entire semester. Students who need to borrow a laptop should send an email to **lab@cs.wisc.edu** to initiate the loan.

Change Log

01.24.2024: Due to course schedule changes, removed Bilge Mutlu as co-instructor
01.24.2024: Added information about the laptop lending program
02.19.2024: Clarified course policy about generative AI