



## CS-770<sup>†</sup> Human-Computer Interaction, *Spring 2024*

### OVERVIEW

#### CREDITS

This is a three-credit course.

#### CANVAS COURSE URL

<https://canvas.wisc.edu/courses/397450>

#### COURSE WEBSITE

<https://cs770.github.io/Spring24/>

#### COURSE PIAZZA URL

<https://piazza.com/wisc/spring2024/sp24compsci770001>

#### COURSE DESIGNATIONS AND ATTRIBUTES

Graduate course in computer science, psychology, and educational psychology

#### MEETING TIME AND LOCATION

**MW 1:00–2:15 pm** in **Vilas 4028**

#### INSTRUCTIONAL MODE

In person, synchronous. Lectures will be recorded and posted for later viewing.

#### SPECIFY HOW CREDIT HOURS ARE MET BY THE COURSE

The credit standard for this course is met by an expectation of a total of 135 hours of student engagement with the course learning activities (at least 45 hours per credit), which include regularly scheduled instructor-student meeting times (during class), reading, writing, problem sets, studio time, labs, field trips, and other student work as described in the syllabus.

#### COURSE DESCRIPTION

This course is designed to introduce graduate students in computer science, psychology, educational psychology, and other disciplines research topics, principles, and research methods in human-computer interaction (HCI), an interdisciplinary area concerned with the study of the interaction between humans and interactive computing systems. Research in HCI looks at major social, cognitive, and physical phenomena surrounding human use of computers with the goal of

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<sup>†</sup> Cross-listed as Psych/EdPsych-770

understanding their impact and creating guidelines for the design and evaluation of software and physical products and services in industry.

The course consists of three modules: (1) **seminar**, which reviews major research topics in HCI through a set of readings, class presentations, and discussions; (2) **methods**, which covers qualitative and quantitative human-subjects research through lectures, tutorials, hands-on activities, and weekly assignments; and (3) **project**, where students complete a semester-long project, usually involving empirical research, that culminates in the writing of a short paper.

The course is designed primarily for graduate students in computer science, psychology, and educational psychology, however advanced undergraduates (with significant research experience and/or enrolled in the L&S Honors program) in these programs and graduate students from other programs may take the course with the permission of the instructor. Specifically, these students should meet with the instructor after the first class of the semester or during the first office hours of the semester to discuss their enrollment.

## REQUISITES

No prerequisites are required to take the course.

## INSTRUCTORS AND TEACHING ASSISTANTS

### INSTRUCTOR TITLE AND NAME

Professor Bilge Mutlu

### INSTRUCTOR AVAILABILITY

During scheduled class hours; during office hours (Wednesdays 2:30–3:00 pm); or by appointment.

### INSTRUCTOR EMAIL/PREFERRED CONTACT

Preferred contact is meeting during office hours or by emailing [hci-class@cs.wisc.edu](mailto:hci-class@cs.wisc.edu).

### TEACHING ASSISTANTS

Ru Wang

### TA OFFICE HOURS

Tuesday/Thursday 4-5pm, via [Zoom](#).

### TA EMAIL/PREFERRED CONTACT

Preferred contact is TA office hours or by emailing [hci-class@cs.wisc.edu](mailto:hci-class@cs.wisc.edu).

## LEARNING OUTCOMES

### COURSE LEARNING OUTCOMES

Student will be able to:

- Define research questions, construct hypotheses, map out and identify gaps in the research literature, and situate research questions and hypotheses in existing knowledge

- Gain familiarity with seminal research across various topics in human-computer interaction
- Determine the research approach that best fits a research question, identify variables of interest for empirical investigation, and design qualitative, quantitative, and hybrid studies
- Determine appropriate objective, behavioral, physiological, subjective, and composite measures for empirical investigation
- Design survey questions, construct scales, and assess reliability and validity
- Analyze qualitative and quantitative data using grounded theory and statistical methods
- Carry out a project to investigate an original research question in human-computer interaction
- Write an academic paper to report on research design and findings

### COURSE TOPICS & SCHEDULE

The table below provides a full list of the topics covered in the seminar and methods modules of the project as well as the assignment and project deliverable schedules. Specific topics and due dates might change during the semester, and students should refer to the version of the topics and schedule on the course website.

	Date	Seminar	Date	Methods	Project
	<i>Mondays</i>			<i>Wednesdays</i>	<i>Due Fridays</i>
W01	Jan 22	No class	Jan 24	Course Introduction	
W02	Jan 29	History of HCI	Jan 31	Introduction to HCI Methods	
W03	Feb 5	Research Frameworks	Feb 7	Choosing Methods	Topic selection
W04	Feb 12	Artificial Agents	Feb 14	Ethnography	
W05	Feb 19	CMC	Feb 21	Qualitative data analysis	Lit. survey, RQ
W06	Feb 26	CSCW	Feb 28	Experimental design I	
W07	Mar 4	Crowdsourcing	Mar 6	Experimental design II	
W08	Mar 11	Accessibility	Mar 13	Measurement I	Method
W09	Mar 18	Spring break	Mar 20	Spring break	
W10	Mar 25	Educational Technology	Mar 27	Measurement II	
W11	Apr 1	Mobile & Tangible Computing	Apr 3	Measurement III	
W12	Apr 8	Privacy	Apr 10	Statistics I	
W13	Apr 15	Physiological Computing	Apr 17	Statistics II	Data collection
W14	Apr 22	Augmented/Virtual Reality	Apr 24	Statistics III	
W15	Apr 29	Final Presentation	May 1	Final Presentation	
W16			May 8	Final paper	

## GRADING

### GRADING WEIGHTS

Assessments	Points
<b>Seminar:</b> Participation in online discussions	15
<b>Methods:</b> Hands-on activities	20
<b>Project</b>	40
<b>Final Presentation &amp; Paper</b>	20
<b>General:</b> Attendance, classroom participation	5
<i>Total</i>	<i>100</i>

### GRADING SCALE

The grading scale will be used as a rough guide to assign final grades, and adjustments will be made to ensure that the grade distribution reflects the general pattern of CS graduate courses. As a rule of thumb, students who make a submission for all required work should expect to get an **A** or an **AB** in class.

<b>A</b>	93.5–100	Excellent work (Exceeds expectations)
<b>AB</b>	89.5–93.4	Good work (Robustly meets all stated requirements)
<b>B</b>	83.5–89.4	Adequate work (Meets the spirit of all stated requirements)
<b>BC</b>	79.5–83.4	Slightly below adequate (Missing small required elements or turned in late without approved extension)
<b>C</b>	73.5–79.4	Below adequate (Missing required elements or turned in late without approved extension)
<b>D</b>	73.4–63.5	Well below adequate (Missing many required elements or turned in late without approved extension)
<b>F</b>	63.5	Inadequate (Work not turned in, no extension requested)

## COURSE STRUCTURE

### MODULE 1: SEMINAR

The **seminar** module of the class will cover principles of and literature in HCI through a set of readings. The list of topics that will be covered in this module are shown in the COURSE TOPICS & SCHEDULE table. A comprehensive list of readings on these topics will be posted on the course website. The first hour of class on Mondays will include a brief introduction to that week's topic

by the instructor, followed by an extended discussion led by students assigned serve as moderators. As a preparation for the lecture and discussion, students will be asked to complete an average of three readings for each topic and to write a 250-word essay that discusses one or several of the readings the beginning of class each week (i.e., a total of 14 essays throughout the semester). Students will sign up to serve as moderators in advance. The essays are due by midnight the day before class (Sunday midnight) and should be submitted to Canvas.

## MODULE 2: METHODS

In the **methods** module, a set of human-subjects research methods and procedures commonly used in HCI will be covered through lectures, tutorials, in-class hands-on activities, and weeklong assignments. The first half of class on Wednesdays will be dedicated to lecture, and the remaining class time will be used for Q&A, tutorials, and hands-on activities. The COURSE TOPICS & SCHEDULE table provides a list of the research methods and procedures that will be covered. Students will work in pairs to complete a graded hands-on assignment during class.

## MODULE 3: PROJECT

In the **project** module, students will conduct a semester-long project to explore HCI research in critical and emerging domains of computing. The goals of the project are:

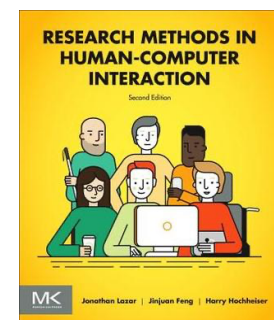
- Completing the required human-subjects research training program and an Institutional Review Board (IRB) application for the project,
- Gaining a theoretical and empirical understanding of the application domain,
- Applying exploratory and experimental research methods in HCI,
- Prototyping user interfaces,
- Designing exploratory and experimental studies,
- Gaining experience in recruiting participants and conducting studies with human subjects,
- Creating generalizable knowledge on how computing can improve aspects of human life.

The project module will be completed through a series of deliverables throughout the semester. These deliverables will contribute to a 8-page paper in the ACM Proceedings format that will constitute the final project deliverable at the end of the semester. The deliverables will follow the schedule shown in the COURSE TOPICS & SCHEDULE table.

Students will work on projects in groups with ~3 people. The page limit for reports are 8 pages. Group projects will be subject to team grading, such that 20% of the project grade will be determined by teammate evaluations.

## REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS

The instructional content for the **seminar** module will include individual research articles that will be posted by the instructor on the course website. The **methods** module will use [\*Research Methods in Human-Computer Interaction\*, Second Edition, by Jonathan Lazar, Jinjuan Heidi Feng, Harry Hochheiser, Morgan Kaufmann \(2017\)](#) (digital version freely



available through the UW–Madison Library.) Software requirements for assignments will be provided in the assignment handouts. All other materials will be provided by the instructor.

## **COURSE POLICIES**

### **POLICIES FOR COURSE CONDUCT**

**Attendance:** Students are expected to attend class, arrive on time, participate in group hands-on activities, and offer comments on readings. In addition, students are expected to offer feedback on and suggestions to improve their classmates' work. If a student needs to miss a class, he/she should inform the instructor and the TA ahead of time email to [hci-class@cs.wisc.edu](mailto:hci-class@cs.wisc.edu).

**Late Policy:** Assignments and project deliverables that are not submitted by the due date will lose 20% of the total grade for that deliverable for each day that the assignment is late.

**Emergencies and Exceptions:** Inform the instructor immediately by emailing [hci-class@cs.wisc.edu](mailto:hci-class@cs.wisc.edu) of any crisis that preclude you from attending a class or an exam.

**Special Needs:** Students with special needs should inform the instructor immediately via email so that accommodations can be made.

**Religious observances:** Let the instructor know well in advance if an assignment, deadline, or major project milestone interferes with an important religious or cultural observance/event.

**Communication:** All class material, including assignment handouts, readings, supplemental materials, and pointers to other resources, will be available on or linked through the course website. All questions regarding assignments, code/analysis, deadline, or expectations that is of interest to all students should be posted on the course Piazza. All communication on individual matters must be done via email through the [hci-class@cs.wisc.edu](mailto:hci-class@cs.wisc.edu) address. Please do not email the instructor or the TA directly. Announcement will be made via Canvas, so students should configure their notification settings to receive announcements in a timely manner.

**Office Hours:** Office hours are the best time to get feedback from the instructor on assignments and projects. Other questions, concerns, individual issues, and team communication problems can be discussed by appointment. The instructor will also be available for questions via email anytime and phone during work hours.

**Classroom recording:** Because pictures and videos we present in class can be copyright-protected or subject to human-subjects protection, no student may record or tape any classroom activity without the express written consent of the instructor. If a student has a disability that requires him/her to record or tape classroom activities, he/she should contact the [UW-Madison McBurney Disability Resource Center](#) to arrange an appropriate accommodation.

## RULES, RIGHTS & 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/>.

## 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.