Introduction to Human-Computer Interaction

Ahmed Sabbir Arif
CSE 155, 4 Units, SPRING 2023 asarif@ucmerced.edu, (209) 228-3639

Catalog Description

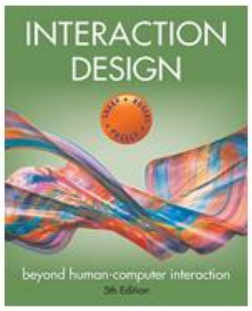
Introduces students to the basic concepts in the theory and practice of Human-Computer Interaction (HCI). Teaches how hardware and software design influence the interaction between human and computers to provide insights into the design and development of safe, effective, and enjoyable interactive systems.

Hours

Lecture	Tuesday	1:30 - 2:45 PM			CLSSRM 105
	Thursday	1:30 - 2:45 PM			CLSSRM 105
Office	By request	CatCourses or email		asarif@ucmerced.edu	SE2-212
Lab 02L	Wednesday	10:30 - 1:20 PM	Ghazal Zand	gzand@ucmerced.edu	KOLLIG 208
Lab 03L	Wednesday	1:30 - 4:20 PM	Ghazal Zand	gzand@ucmerced.edu	CLSSRM 281
Lab 04L	Wednesday	7:30 - 10:20 PM	Yuan Ren	yren5@ucmerced.edu	SSM 154
Lab 05L	Friday	7:30 - 10:20 AM	Yuan Ren	yren5@ucmerced.edu	CLSSRM 281
Lab 05L	Friday	10:30 - 1:20 PM	Tafadzwa Joseph Dube	tdube@ucmerced.edu	CLSSRM 281

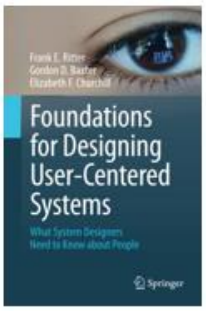
Textbooks and Other Required Materials

The course does not use a textbook, but the following books are recommended.



Interaction Design: Beyond Human-Computer Interaction (5th Edition)
Helen Sharp, Jennifer Preece, Yvonne Rogers

Human-Computer Interaction: An Empirical Research Perspective (1st Edition)
I. Scott MacKenzie



Foundations for Designing User-Centered Systems: What System Designers Need to Know about People
Frank E. Ritter, Gordon D. Baxter, Elizabeth F. Churchill

Course Objectives

Students of this course are expected to achieve the following learning outcomes through an understanding of basic theory and practices in Human-Computer Interaction (HCI):

CO 1. An ability to think critically about interactive computer systems.
CO 2. An ability to account for both human and system factors in the design of interactive computer systems.
CO 3. An ability to make design decisions by applying appropriate concepts and strategies.
CO 4. An ability to verbalize, discuss, and articulating key concepts and issues.
CO 5. An ability to describe interactive computer systems, issues, and solutions in clear, understandable language.
CO 6. An ability to work individually and in teams to attain a common goal.
CO 7. Practice a high standard of professional ethics.
CO 8. Engage in continuing professional development by adapting new methods, technologies, and tools.

Program Learning Outcomes

This course satisfies the following program learning outcomes:

PLO 1. An ability to apply knowledge of computing and mathematics appropriate to the discipline [CO3].
PLO 2. An ability to analyze a problem and identify the computing requirements appropriate for its solution [CO1].
PLO 3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs [CO3].
PLO 4. An ability to function effectively as a member of a team in order to accomplish a common goal [CO3].
PLO 5. An understanding of professional, ethical, legal, security, and social issues and responsibilities [CO7].
PLO 6. An ability to communicate effectively with a range of audiences [CO4].
PLO 7. An ability to analyze the local and global impact of computing on individuals, organizations, and society [CO1,2].
PLO 8. Recognition of the need for an ability to engage in continuing professional development [CO8].
PLO 9. An ability to apply mathematical foundations, algorithmic principles, and computer science theory to the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices [CO3].
PLO 10. An ability to apply design and development principles in the construction of software systems of varying complexity [CO3].

Prerequisites by Topic

CSE 100: Algorithm Design and Analysis.

Course Policies

Class participation is required. Late submission is not permitted.

Lecture. Lecture slides will be uploaded to CatCourses. Students are required to take notes during the lectures, especially when the instructor elaborates on a topic beyond the content of the lecture slides.

Lab. Labs are for seeking assistance and resolutions to problems students are facing with course projects, including design and development issues. Some special topics labs will be dedicated to specific learning objectives, for example how to create demonstration videos. Special topics labs will be announced ahead of time. Participation in these labs is mandatory. A teaching assistant will be available during the lab to assist students with their projects. Teaching assistants will not explain or teach the topics discussed in class or answer questions regarding the course structure and grading policy.

Group Projects. Students will form a group of 3-5 from the same lab section. Students without a group will be assigned to existing groups by the instructor. Groups and projects assignments are final, no future changes are accepted. Each project will involve the design, development, and evaluation of an interactive system. Each group will present (15 minutes) and report (3-6 pages) the findings of the project. These projects will prepare students for real-world software and systems design.

Midterm and Final. Both exams will be open-book and take place online on CatCourses. The midterm exam will cover everything taught before the exam. The final exam will be comprehensive. These exams will be composed on multiple choice questions, true/false questions, short answers, and case studies.

Lecture Topics

The course covers the following topics:

- History of human-computer interaction
- Human Sensors
- Human responders
- Human brain
- Human performance
- Interaction elements
- Performance modeling

- Research vs. engineering vs. design
- Qualitative research
- Quantitative research
- Data collection and analysis
- Design thinking
- Prototyping
- Research ethics
- Writing research reports

Labs Topics

1. Introduction to Qualtrics XM for Survey (link)
2. Introduction to Balsamiq for Wireframing (link)
3. Introduction to Figma for Prototyping (link)
4. Introduction to HTML, JavaScript, and CSS
5. Introduction to Python
6. Introduction to Android Studio (link)
7. Introduction to Android Widgets (link)
8. Introduction to Google Translate API (link)
9. Introduction to Text-to-Speech API (link)
10. Introduction to Overleaf
11. How to prepare demonstration videos

Assessment and Grading Policy

Labs	10 x 1 pts		10%
Assignments	4 x 5 pts		20%
Midterm	Multiple choice	5 x 1 pts	20%
	True/false	5 x 1 pts	
	Short answers	2 x 2 pts	
	Case study	1 x 6 pts	
Final	Multiple choice	5 x 1 pts	30%
	True/false	5 x 1 pts	
	Short answers	4 x 2 pts	
	Case study	2 x 6 pts	
Final Project	Group formation	2 pts	20%
	Source code	5 pts	
	Presentation	5 pts	
	Report	8 pts	

Rubric for plagiarism penalty:

Between 10 and 20%	-20%
Between 20 and 50%	-50%
Over 50%	-100%

Groups with over 50% Turnitin plagiarism match will be reported to the Office of Student Rights and Responsibilities.

Diversity, Equity, and Inclusion Statement

We faculty and TA's of CSE 155, recognize that our individual differences can deepen our understanding of one another and the world around us, rather than divide us. In this class, we will work together to develop a learning community that is inclusive and respectful. Our diversity may be reflected by differences in race, ethnicities, nationalities, culture, age, religion, genders and gender identities, disabilities, sexual orientation, socioeconomic background, political affiliation, and myriad other social identities and life experiences. The goal of inclusiveness, in a

diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that respectful conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment and growth.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both speaking up and listening are valuable tools for furthering the thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative, and excellent learning community. Our core commitment shapes our core expectations for behavior inside and outside of the classroom. If at any point you feel your differences may in some way isolate you from our class community or if you have a need for any specific accommodations, please speak with us about your concerns and what we can do together to help you become an active and engaged member of our learning community.

Academic Integrity

Academic honesty is taken very seriously at UC Merced. The Academic Honesty Policy and the Code of Student Conduct emphasize that students, faculty, and administration all share responsibility for maintaining a fair and honest academic environment. UC Merced is creating a strong tradition of upholding the student academic honesty policy and addressing suspected violations through the Report Form for Academic Misconduct and when appropriate the Office of Student Rights and Responsibilities (OSRR). Faculty and students both express confidence in the current process, which resolves almost all cases through informal meetings with students rather than formal hearings and emphasizes education in the discipline process. Faculty and OSRR strive to hold students accountable for violations but gives them the opportunity to learn from their mistakes.

Academic Dishonesty Statement

1. Each student in CSE 155 is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.
2. Students are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. They may give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an email, an email attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.
3. During examinations, students must do their own work. Talking or discussion is not permitted in the examinations, nor comparing papers, coping from others, or collaboration in any way. Any collaborative behavior during the examinations will result in failure of the exam and may lead to failure of the course and University disciplinary action.

Student Accessibility

If you anticipate or experience barriers due to pregnancy, temporary medical condition, or injury, please feel welcome to contact me so we can discuss options. You are encouraged to contact the Dean of Students for support and resources at (209) 228-3633 or https://studentaffairs.ucmerced.edu/dean-students.

University of California, Merced is committed to creating learning environments that are accessible to all. If you anticipate or experience physical or academic barriers based on a disability, please feel welcome to contact me privately so we can discuss options. In addition, please contact Student Accessibility Services (SAS) at (209) 228-6996 or access@ucmerced.edu as soon as possible to explore reasonable accommodations. All accommodations must have prior approval from Student Accessibility Services on the basis of appropriate documentation.

Campus Resources and Student Services

UC Merced has myriad services focused on student success and plethora of Tutoring Services.