

Human-Computer Interaction - CSCE 436 (Spring 2022)

Seminar + Studio combined class. In this class, you will learn various details of cutting-edge technologies and prototyping techniques to make tangible computers for human-computer interaction. This class intends to provide a general understanding of HCI theories, design principles, design & implementation techniques, then to offer fundamental skills for prototyping to investigate users' needs in product/system development.

Learning Outcomes

With the focus on a broad spectrum of technical HCI, student will be able to describe (1) fundamental HCI principles and how they support the process of the new technology development, (2) the process of HCI research from need finding to user evaluation, and develop (4) prototypes of digital/physical artifacts using machines and tools— skill acquisitions for effective communication.

Instructor

Jeeeeun Kim (<http://jeeeeunkim.com/>)

Email: Jeeeeun.kim@tamu.edu

Office hours: Friday 10 am-12 pm

PETR 336 or via Zoom ([tamu.zoom.us/my/jeeeeunkim](https://tamu.zoom.us/j/jeeeeunkim)), otherwise by appointment.

Teaching Staff

Nahyun Kwon (TA, Co-Instructor)

Email: nahyunkwon@tamu.edu

Zoom link: <https://tamu.zoom.us/j/7647927393> (979-422-1648)

Office hours: Tuesday 5 pm - 7 pm, via Zoom or by appointment.

Han Zhang (Grader)

Email: zh89118877@tamu.edu

Himani Deshpande (Co-Instructor)

Email: hdeshpande11@tamu.edu

Abul Al Arabi (Co-Instructor)

Email: abulalarabi@tamu.edu

Logistics

F2F, Synchronous

If you have tested positive for covid or need quarantine, please email the instructor, the class zoom link will be provided to attend immediately.

Zoom recording of the lecture will be available through Canvas momentarily.

Class Time: Wednesday 4:10pm - 6:50pm

(We will start at 4:15pm for people who need some time for relocation)

Course Website

For questions, assignments, activities, midterm/final submissions, communications:

<https://csce436spring22.slack.com>

Grading Policies

Scale

90-100	A
80-89	B
70-79	C
60-69	D
<60	F

Weight

Participation (class participation): 10%

Assignments + In-studio activities (Individual, unless specified): 30%

Midterm project* (Group project): 30%

Final project* (Group project): 30%

project grading will be partly peer-reviewed (50%), and grader/TA graded. Breakdowns will be provided **in the Class Slack (csce436spring22.slack.com) & Canvas*

No written exam, no quiz

Deliverables

Assignment (Individual): HCI observation activities, interactive system design/prototyping practices, evaluation techniques, peer-review critiques

Submit through the slack for **Open Curation**.

Always due by Tuesday 11:59 pm (CT) of the following week, unless specified.

Midterm 1: YouTube Video on the deployment of your flipped affordance

Final project: Prototype of your own interactive system/machine **invention**

1. Project website showcasing your work;
 - Introduction and Motivation: What important real-world issue does this solve?
 - Descriptions of system design/development processes
 - Photos of your prototype
 - Video of your usage scenario (walkthrough)
2. Presentation of your final project

Requirements

- No prerequisite, **I welcome all students with various backgrounds** (CS/CE, EE, ME, Architecture, Design, Material Science, etc.)
- There will be a random selection of class activity presenters, **if you miss the class so miss the presentation without notice, your final grade will be downgraded by one letter grade**
- Always bring something to sketch with
- no texting/Facebooking/Instagramming during the class -- **No exception**
- Be ready for heavy hands-on studio activities and projects; you will be likely to spend 3+ hours/week
- This class will introduce a wide variety of topics in rapid prototyping and late-breaking interaction technologies with VERY quick turnarounds. You don't need to be a geek, but **you should become a fast learner**: acquire new skills and self-advance to the (semi)expert level with your investment.
- Bring your own passion and motivation-- This course will help you build your portfolio & research experiences with QUALITY, not your course credits with QUANTITY

Reading

Week 1:

- [*Reflective Physical Prototyping through Integrated Design, Test, and Analysis*](#) (UIST'06) by Björn Hartmann, Scott R. Klemmer, Michael Bernstein, Leith Abdulla, Brandon Burr, Avi Robinson-Mosher, Jennifer Gee

Week 2:

- [*How Bodies matter: five themes for interaction design*](#) (DIS'06) by Scott R. Klemmer, Björn Hartmann, and Leila Takayama
- [*Organic User Interfaces & Tangible Interfaces*](#) (Communications of ACM) by Roel Vertegaal, Ivan Poupyrev, Hiroshi Ishii

Week 3:

- [*User Centered Design Process*](#) by MIT CSAIL HCI
- [*Needfinding Tools*](#) by Stanford d. School

Week 4:

- [*Integrating Craft Materials and Computation*](#) by Glenn Blauvelt, Thomas Wrensch, Michael Eisenberg
- [*Middle tech: blurring the division between high and low tech in education*](#) by Michael and Ann Eisenberg

Week 5:

- [*Creativity Support Tools*](#) by Ben Shneiderman

Week 6:

- [*What do Prototypes Prototype?*](#) (In Handbook of Human-computer interaction, 2nd ed.) by Stephanie Houde, Charles Hill
- [*Getting the Right Design and the Design Right: Testing Many Is Better Than One*](#) by Maryam Tohidi, William Buxton, Ronald Baecker, Abigail Sellen

Week 7:

- [*The Dark Side \(Patterns\) of UX Design*](#) by Colin Gray, Yubo Kou, Bryan Battles, Joseph Hoggatt, and Austin L. Toombs

Week8:

(Spring Break)

Week 9:

- [*Reflective Physical Prototyping through Integrated Design, Test, and Analysis*](#) by Björn Hartmann, Scott R. Klemmer, Michael Bernstein, Leith Abdulla, Brandon Burr, Avi Robinson-Mosher, Jennifer Gee

Week 10:

- [*The Case for Inclusive Design*](#) by Microsoft

Textbook (Optional)





- [*Interaction Design: Beyond Human-Computer Interaction*](#) by Helen Sharp, Jennifer Preece, Yvonne Rogers
- [*Designing the User Interface*](#) by Ben Shneiderman & Catherine Plaisant
- [*The Design of Everyday Things*](#) by Don Norman
- [*The Humane Interface: New Directions for Designing Interactive Systems*](#) by Jef Raskin








Course Schedule

The schedule below is provisional, subject to change based on the progress.

Honors Students will be assigned in-depth project-oriented assignments, in addition to the below.

* Indicates part of your project milestone, which is a team submission: will not be graded as part of personal assignments

Week	Class type	Lecture & Studio activities	Slide	Assignment
1 (1/19)	Lecture	Course Intro: What's HCI and Why? This semester's theme: Improve Accessibility		(#0) Sign up a course website and create a profile picture
2 (1/26)	Studio	Group formation & collective poster about the team information Warm-up exercise for paper prototyping (Paper pinhole camera)		(#1) Miroboard of team poster* (#2) Media (photo, video, etc.) of a complete pinhole camera
3 (2/2)	Lecture	Interaction Design Principles Discovery methods (Needfinding Studies) /Understanding Users		(#3) A video of affinity diagramming process and final affinity diagram*
4 (2/9)	Studio	Card sorting & observation analysis Cardboard prototyping to redefine the interaction		(#4) A video about your cardboard machine use-case story*

5 (2/16)		Mid-term Project Interim Presentation Case studies of flipped norm What are commons vs. what has been flipped		(#5) Complete this form to provide peer critiques during the class
6 (2/23)	Lecture	Special Seminar: Extended Reality Dr. Kangsoo Kim, University of Calgary		() Reflection note
7 (3/2)	Studio	Prototyping methods and Iteration Input & Output		(#6) Complete p5.js challenges
8 (3/9)		Low-fidelity prototyping of an interactive system High-fidelity prototyping interactive UI using p5.js		(#7) Replicated wireframe using low-fi prototyping tools (e.g., balsamiq) (#8) 1 min. video of complete interactive UI
3/16		No Class; Spring break		No assignment
9 (3/23)	Lecture + Studio	Mid-term Project Presentation Flip the norm and observe how people react		(#9) Complete this form for peer-review
10 (3/30)	Lecture + Studio	Special Topics in HCI I: Human-AI Collaboration: Crowdsourcing and Human-in-the-Loop		(#10) Project website template with Motivation statement, detailed 5-week milestone
11 (4/6)		Individual Team meeting & feedback (10min./team)		No assignment
12 (4/13)	Lecture + Studio	Special Topics in HCI II: 3D/4D Printing for HCI Application Design		(#11) Complete this challenge for 3D Modeling
13 (4/20)	Lecture + Studio	Special Topics in HCI III: Robotics and Human-Robot Interaction		(#12) Complete this challenge for programming in 3D
14 (4/27)		Final Project Presentation I Final results, Example applications, Limitation		(#13) Complete this form for peer-review during the class
15		Final week, No class; No final exam		All projects materials are due

Attendance Policy

See below attendance & makeup policies for detail.

Late Work Policy & Makeup

If an absence is excused, make an appointment with the instructor (jeeeun.kim@tamu.edu) for make-up work. The subject and task will vary upon your absent assignment and deliverables. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence.

Work submitted by a student as makeup work for an excused absence is not considered late work and is exempted from the late work policy. (See Student Rule 7.) Extensions/make-ups can be given 12 hours prior to the deadline upon written/in-person request. 10 min. will be given as a grace period. Otherwise, 50% off from the credit you got for that submission. If you have more than two late submission, your final letter grade will be downscaled by one letter. All other submissions of a deliverable after the established deadline without prior request constitutes late work.

Email Policy

Like many professors, I get a ton of emails. When you email me, please be sure that the question you ask requires my answer in one or two short sentences. Otherwise, I put it back to respond with a full (long) context, then unfortunately, may forget. **Slack message is a better way to get my immediate response.**

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments. Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines. Makeup Work Policy Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines. Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2). Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case"

(Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

NOTE: Faculty associated with the main campus in College Station should use this Academic Integrity Statement and Policy. Faculty not on the main campus should use the appropriate language and location at their site.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

NOTE: Faculty associated with the main campus in College Station should use this Americans with Disabilities Act Policy statement. Faculty not on the main campus should use the appropriate language and location at their site.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and Stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS). Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

NOTE: Faculty associated with the main campus in College Station should use this Title IX and Statement on Limits of Liability. Faculty not on the main campus should use the appropriate language and location at their site.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. on weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.