CS-280-01: Foundations of Human-Computer Interaction

Willamette University, Fall 2024

Instructor:

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Office Hour: W, F (11a-12:30p)

Web: https://willamette.instructure.com/courses/6122
Lecture: T/Th (9:40am – 11:10am)
Lecture Hall: Ford Hall 102
Course Discord Server: https://discord.gg/bPJAaB2w

(This syllabus is subject to modification as the semester progresses - particularly the class schedule. I'd inform when there is an update)

Brief Course Description

This course covers the foundations of Human-Computer Interaction - the study of how computer systems can be designed to support the needs of the people whom we intend to use them. The course focuses on the methods and principles for designing persuasive systems and provides an introduction to **User-Centered Design (UCD)**, **User Interface (UI)**, and **User Experience (UX) design**. At a basic level, we will cover Usability, UCD, prototyping, how this process fits into existing software product development, as well as how we might interact with computer systems in the future. As a trailer, check out this short clip by the CS Education Research Group at the University of Canterbury.

This course will take a practical approach where students would learn by doing.

Prerequisite(s): This course is meant for students who naturally had complete CS introductory courses including CS 151. It would be an additional advantage for students that have previously completed *software engineering* course. However, because of the interdisciplinary application of concepts to be learned in this course, I would encourage even non-computer science majors to try it out. ***Please note, students who enroll in this course must be ready to work in group collaboration to apply what they are learning in the classroom on a group project.***

Text and Materials for this course:

Text: Designing the User Interface: Strategies for Effective Human-Computer Interaction (6th Edition)

Authors: Ben Shneiderman et al.

Availability: This book is not available for free, at least from my knowledge. While I will use plenty resources that are available free online, I will base the class lecture on the chapters in this book. I'd highly recommend you to read the book and also study short materials (text and videos) provided weekly to benefit more from the course.

Course Objectives:

At the end of this course the student should be able to:

- Gain knowledge on the principles, methods, and theories of interface design and HCI in general
- Understand the importance of user-centeredness in design process
- Conduct users experience and usability study
- Gain experience on how to deal with ethical issues in users' study
- Learn how to discover a problem, identify users and describe personas, design a prototype to address the problem, and evaluate artefacts using standard techniques
- Learn how to work, communicate, and interact in a team to execute a project
- Develop the skill of peer-review, and how to provide thoughtful, respectful, and constructive comments when evaluating others' work
- Compare and contrast qualitative and quantitative evaluation techniques, and apply them in life situation.
- Be able to propose and justify an appropriate evaluation technique to a given problem
- Gain awareness of practical issues with the application of HCI in an industrial context.

Course Structure and Assessment

This course will consist of lectures, class activities and discussions, individual weekly readings and homework, group projects, a mid-term reflection, and final project delivery and presentations. Each course component is very important to gaining expected learning outcomes and scoring high grades. Looking at its comprehensive nature, students are encouraged to give their best in all the components of the course. Full class attendance and participation in activities in and outside class are mandatory.

- **Lectures**

Lectures, class activities, and discussions will be held every Tuesdays and Thursdays from 8/27/ – 12/10/2023, (except for holidays or other events from the university that may override). Please check out the course syllabus in CANVAS. Slides and other resources for the lecture are accessible from the course webpage in CANVAS. While I explore how to conform to accessibility best practices, I will appreciate your feedback if some of the materials are inaccessible. Also, I am open to learning new ways of implementing accessibility in this course and any tips is welcome.

- **Weekly readings and homework**

There will be several weekly readings to be completed on individual bases to prepare for next class discussions. The class activities and discussions could come in form of quiz, teaser, open dialogue, collaborations, etc. and students could demonstrate knowledge gained from weekly readings to earn grade points. In addition, there will be a few individual and group homework.

- **Projects**

This course consists of one major project that would require students to execute in group of 2 to 3 members per group. There might be exception to the grouping depending on several factors. The course will practically work students through UX design process and usability study within a context of one of the HCI genres. There will be proof of concept presentation (mid-term), group peer-reviewing, group portfolio/report and presentation (finals). All of these activities will contribute towards the grade points on project.

- **Final review and reflection**

The course will end with a review and reflection on topics covered throughout the course. This will be an essay that allow students to describe their learning outcomes in the course.

Feedback and Course Grading

I will ensure that feedback is provided on each homework, and project presentations. Aside from the feedback, certain percentage of the grade will be awarded to students who actively participate in the classroom, project activities, and through other communications channels created for this course. The grade allocation is below:

- Active participation: 15%
- Homework: 20%
- Group project: 50%
  - Articulation of the design problem: 5%
  - Mid-term concept presentation: 15%
  - Final project presentation/demo: 5%
  - Final project portfolio/report: 20%
  - Project peer-review and self-evaluations: 5%
- Final review and reflection 15%

Grade distribution:

- >= 95.00 -> A
- 90.00 - 94.99 -> A-
- 85.00 - 89.99 -> B+
- 80.00 - 84.99 -> B
- 75.00 - 79.99 -> B-
- 60.00 - 74.99 -> C
- < 60.00 -> F

Course Policies:

- Collaboration is highly encouraged in this course both during and outside of the classroom. Students may work together to prepare for reviews and class discussions.
- Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

- Additionally, students MUST adhere to the academic policies set out by the University and the School of Computing and Information Sciences.

Late Submission and Incomplete Policy

I am adapting Jed's course policy which I found very generous enough! I totally understand that as human, things can sometimes come up or go wrong and you are unable to get an assignment turned in on time. This kind of situation calls for some flexibility where I could consider accepting a late submission. However, this flexibility MUST be subject to my awareness and approval. Therefore, if any student is in this kind of unfortunate situation and would need more time to submit homework or project a bit late, please, contact me immediately. I must receive an email and reply to it in order to implement this policy. As a matter of rule, no lateness beyond 1 day (24 hours) can be tolerated for any given homework/project. In some cases, penalty (i.e., losing portion of the grade for the particular submission) could be applied by the instructor based on the assessment of reasons for late submission, which is solely at instructor's discretion.

Time Commitment:

Willamette's Credit Hour Policy holds that for every hour of class time there is an expectation of 2-3 hours' work outside of class. Thus, for this class you should anticipate spending 6-9 hours outside of class engaged in course-related activities. Examples include reading course materials, preparing for discussion, working on group projects, preparing and writing papers and exams.

Willamette Policies:

This section has been largely developed/adapted from the Willamette University Academic Policy which can be accessed via this link https://willamette.edu/arts-sciences/catalog/policies/Links to an external site.. As a result, the employer's view constitutes the information represented here except for minor edits made by the instructor to adapt the context to the specific case study of this class. Regarding the University's policies on course registration, add, drop, and withdrawal, see the this link: https://portal.willamette.edu/offices/policies/Pages/Add-Drop-Withdrawal-Policy.aspxLinks to an external site. I will appreciate if students can reach out to me on any issues that have not been represented regarding policies that guides this class.

Academic Honesty

Cheating is defined as any form of intellectual dishonesty or misrepresentation of one's knowledge. Plagiarism, a form of cheating, consists of intentionally or unintentionally representing someone else's work as one's own. Integrity is of prime importance in a college setting, and thus cheating, plagiarism, theft, or assisting another to perform any of the previously listed acts is strictly prohibited. An instructor may impose penalties for plagiarism or cheating ranging from a grade reduction on an assignment or exam to failing the course. More about policies on academic honest/dishonesty in the School of Computing and Information Sciences can be accessed here (https://drive.google.com/file/d/1igctpQFli95K0uWErW3o0gVjXiMpl-Rk/view).

Academic Integrity

Students of Willamette University are members of a community that values excellence and integrity in every aspect of life. As such, we expect all community members to live up to the highest standards of personal, ethical, and moral conduct. Students are expected not to engage in any type of academic or intellectually dishonest practice and encouraged to display honesty, trust, fairness, respect, and responsibility in all they do. Plagiarism and cheating are especially offensive to the integrity of courses in which they occur and against the College community as a whole. These acts involve intellectual dishonesty, deception, and fraud, which inhibit the honest exchange of ideas. Plagiarism and cheating may be grounds for failure in the course and/or dismissal from the university. http://willamette.edu/cla/catalog/policies/plagiarism-cheating.php

Classroom Conduct

As an educational institution, the School of Computing and Information Sciences is committed to supporting the ideals and standards that help create a constructive and healthy learning community. That requires, among other things, encouraging positive classroom behaviors, discouraging disruptive classroom behaviors, and setting clear standards for both of those things.

Constructive classroom behaviors are those that support learners and teachers in an environment that promotes trust, respect, and collaborative learning.

Disruptive classroom behaviors are those that undermine or interfere with the abilities to learn and to teach. Clear examples of disruptive behaviors include, but are not limited to: interrupting others or persistently speaking out of turn; distracting the class from the subject matter or discussion at hand; making unauthorized recordings or photos of a class meeting or discussion (except as permitted as part of an Accessible Education Services-mandated accommodations); and in extreme cases, any physical threat, physical, psychological, sexual harassment, ridicule, or abusive act towards a student, staff member, or instructor in a classroom or related setting.

Commitment to Positive Sexual Ethics

Willamette is a community committed to fostering safe, productive learning environments, and we value ethical sexual behaviors and standards. Title IX and our school policy prohibit discrimination on the basis of sex, which regards sexual misconduct — including discrimination, harassment, domestic and dating violence, sexual assault, and stalking. We understand that sexual violence can undermine students' academic success, and we encourage affected students to talk to someone about their experiences and get the support they need. Please be aware that as a mandatory reporter I am required to report any instances you disclose to Willamette's Title IX Coordinator. If you would rather share information with a confidential employee who does not have this responsibility, please contact our confidential advocate at confidential-advocate@willamette.edu. Confidential support also can be found with SARAs and at the GRAC (503-851-4245); and at WUTalk - a 24-hour telephone crisis counseling support line (503-375-5353). If you are in immediate danger, please call campus safety at 503-370-6911.

DACA/Undocumented Student Advocate

Willamette is committed to supporting our DACA/Undocumented students in a variety of ways. This year, Olivia Muñoz is the contact person for all DACA/undocumented students can provide those students with a number of external and internal resources that are available. Her contact information is email:omunoz@willamette.edu, Office: 3rd Floor UC, Phone: 503-370-6447.

Diversity and Disability Statement

Willamette University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. My goal is to create a learning environment that is usable, equitable, inclusive and welcoming. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, please notify me as soon as possible. Students with disabilities are also encouraged to contact the Accessible Education Services office in Smullin 155 at 503-370-6737 or Accessible-info@willamette.edu to discuss a range of options to removing barriers in the course, including accommodations.

SOAR Center Offerings: Food, Clothing, and School Materials

The Students Organizing for Access to Resources (SOAR) Center provides free, confidential, and equitable access to food, toiletries, professional clothing, textbooks and scholarly resources for all WU and WU-affiliated students. The SOAR Center is located on the Putnam University Center's third floor. The space houses the Bearcat Pantry, Clothing Share, and First-Generation Book Drive and is maintained by committed students and advisors. Please check www.willamette.edu/go/soar for current hours of operation and email soar-center@willamette.edu for any questions or concerns.

Land Acknowledgement

We are gathered on the land of the Kalapuya, who today are represented by the Confederated Tribes of the Grand Ronde and the Confederated Tribes of the Siletz Indians, whose relationship with this land continues to this day. We offer gratitude for the land itself, for those who have stewarded it for generations, and for the opportunity to study, learn, work, and be in community on this land. We acknowledge that our University's history, like many others, is fundamentally tied to the first colonial developments in the Willamette Valley. Finally, we respectfully acknowledge and honor past, present, and future Indigenous students of Willamette.

Intellectual Property & Privacy

Class materials and discussions including recorded lectures are for the sole purpose of educating the students enrolled in the course. The release of such information (including but not limited to directly sharing, screen capturing, or recording content) is strictly prohibited, unless the instructor states otherwise. Doing so without the permission of the instructor will be considered an Honor Code violation and may also be a violation of other state and federal laws, such as the Copyright Act.

Tentative Course Outline:

Week	Tuesday	Thursday	Weekly Preps: Posted on Mondays	HW Due
Week 1	Aug 27 Kick-off lecture	Aug 29 Intro to HCI	Sep 2 1. The Psychopathology of everyday things – by Norman (Chapter 17, pages 434-459: PDF or Audio book) 2. DiSalvo et al. 6 genres of HCI	Sept 3 HW1
Week 2	Sept 3 Genres of HCI	Sept 5 Understanding users -1 (DUI chapter 1 & 2)	Sept 9 1. Olympic Messaging System by Gould et al (PDF) 2. Participant Observation by Klemmer	Sept 10 HW2
Week 3	Sept 10 Understanding users -2 Personas (in-class activity)	Sept 12 UCD guidelines, principles, and theories (DUI chapter 3)	Sept 16 The myth of common sense and intuitive design by Becker	Sept 17 Project topic
Week 4	Sept 17 Design Process	Sept 19 Persuasive design (DUI chapter 4)	Sept 23 1. The process of persuasion – Interaction Design Foundation 2. US Navy to ditch touchscreen ship controls for wheels and throttles	Sept 24
Week 5	Sept 24 Understanding UX	Sept 26 Interface design and UX (DUI chapter 5)	Sept 30 1. Paper prototyping by Snyder (PDF) 2. Design thinking: Get started with prototyping by Dam and Siang (PDF)	Oct 1
Week 6	Oct 1 Ideation (in-class activities)	Oct 3 Low fidelity prototyping	Oct 7 1. We are researchers, but we are also humans by Yamamoto et al (PDF) 2.Sketching_User_Experiences_the_Workbook by Greenberg et al (PDF)	Oct 8 Project D#2 (Low-F)
Week 7	Oct 8 High fidelity prototyping	Oct 10 Midterm Presentation (Project)	Oct 14 1. Ethics Pathways in HCI Research (PDF) 2. How to conduct a heuristic evaluation by Nielsen (PDF) 3. **Klemmer**, Heuristic Evaluation	Oct 15
Week 8	Oct 15 Research ethics and IRB process	Oct 17 Usability testing	Oct 21 1. Why You Only Need to Test with 5 Users 2. Qualitative interviews by Lesilie	Oct 22
Week 9	Oct 22 Usability evaluation	Oct 24 Interactive technologies (what, why, when?) (relocate to Ford 301)	Oct 28 The technologist's responsibilities and social change by Mark Weiser	Oct 29
Week 10	Oct 29 Interactive technologies (LLM)	Oct 31 Interactive technologies (VR & AR)	Nov 4	Nov 5 Project D#3: High-Fi & Eval-Plan
Week 11	Nov 5 Interactive technologies (Persuasion)	Nov 7 Interactive technologies (Persuasion)	Nov 11 Can we create new senses for humans? - **Eagleman**	Nov 12 Project D#4: Results
Week 12	Nov 12 Future Technologies: Wearables and Ambient intelligence	Nov 14 Away for a conference	Nov 18	Nov 19 Project D#4 P-Feedback
Week 13	Nov 19 Communication and collaboration (DUI Ch 11)	Nov 21 Project mentorship (in-class discussion)	Nov 25	Nov 26
Week 14	Nov 26 Project peer-review (in-class discussion)	Nov 28 Fall break	Dec 2	Dec 3 Project D#5 Report & Presentation
Week 15	Dec 3 Project Presentations & Finals Review/Reflection			

* *Designing User Interface (DUI) – 6th Edition by Shneiderman et al.; Class on 10/24 relocates to Ford 301 due to Board event*