

# CS-580: Advanced Human-Computer Interaction



Willamette University, Fall 2024

## Instructor:



**Fred Agbo, PhD**

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Office: Ford Hall 209

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

Web: <https://willamette.instructure.com/courses/6123>

Lecture: TH (6pm – 10pm)

Lecture Hall: (TBD)

Communication (Discord): <https://discord.gg/KKkGtsqv>

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*(This syllabus is subject to modification as the semester progresses - particularly the class schedule)*

## Brief Course Description

Human-computer interaction (HCI) experts are not only concerned about designing for productivity and satisfaction of customers but also about human factors that affect acquisition, disposal, renewal, reuse, and re-design for sustainability. This course is project-based, and will allow students to gain knowledge on the theories, principles, and goals for designing ICT solutions for sustainability, as well as applying HCI methods for developing ICT solutions - such as 'Green ICT' - to address sustainable development goals. Additionally, students will comprehend the role, purpose, and impact of various design methods (i.e., participatory design, design research, and usability studies) in designing ICT for sustainable development.

**Prerequisite(s):** This is one computer science courses whose application is interdisciplinary. It does not have prerequisite, and thus, can welcome even non-computer science students. Notwithstanding, it would be an advantage if students have some knowledge in *software engineering and development*.

## Resources for this course:

There are plenty of resources on HCI online, but this course recommends two books from which most of the discussions and lectures are based. In addition, some of the materials for weekly reading will include articles which I will make freely available on Canvas. As a tip-off, enjoy a short dramatic video on the landing page of Computer Science Field Guide in this link <https://www.csfieldguide.org.nz/en/chapters/human-computer-interaction/>

## Course Objectives:

At the end of this course the student should:

- gain sustainability thinking and demonstrate sustainability competence
- be aware of the goals, principles and methods for designing ICT for sustainable development
- differentiate between designing ICT for sustainable development and general development goals
- comprehend the role, purpose and impact of various design methods and principles (i.e., participatory design, design research, usability studies and energy efficiency) towards designing ICT for sustainable development.
- understand the various perspectives related to the effectiveness of designing ICT for sustainable development.
- gain research experience on user-centered design process

## Course Structure and Assessment

This course will consist of lectures, weekly reading and in-class discussions, homework, group projects, and a final presentation/report. Each course component is very important to achieve expected learning outcomes including good 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 are mandatory.

- **Lecture**

Lectures will be held every Tuesday from August 26 to December 3, 2024 (except for holidays or other events from the university that may override). The time for the lecture is 6pm to 10 pm. Please check out the course syllabus on Canvas. Slides and other resources for the lecture can also be accessible from the course webpage on Canvas. While I explore how to conform to accessibility best practices, I will appreciate your feedback to let me know 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.

- **Class Activities**

There will be regular hands-on class activities to be completed both individually and in group. Therefore, students are advised not to miss any class as that will affect them keeping up with the class and reduce their grade performance. All absences that are not excused by the university will not be allowed. If there is an unavoidable cogent reason why a student will be absent from the class, that student must write me by email to explain the situation. In all cases of absence, it is the student's responsibility to get all missing notes and materials. According to the policy of the School of Computing and Information Sciences, students must attend up to 75% of the class to be able to earn grade.

- **Homework**

There will be several homework to be completed on individual bases during this course. I will decide on the number of homework to be administered. Each homework would contain problem sets that focuses on demonstrating knowledge gained from previous classes or reading materials suggested by the me. All homework must be submitted to me on the due date via Canvas.

- **Projects**

This course consists of one major project that would require students to work in a group of 2 to 3 members. In exceptional cases, a student can be allowed to work alone but that arrangement would be approved by me. The course will practically work students through UX design process within a context of one of the HCI genres and group project must seek to address one or more goals of the SDG. There will be concept presentation, group report, and peer-reviewing from each group. All of these activities will contribute towards the grade assigned to project.

- **Final Reports and Reflections**

The final report and reflection will be held on the week of the finals scheduled by the registrar. During the finals, each group will take turn to present their project in-person and also write a personal reflection about their learning gains during the course.

## **Assessments and Course Grading**

I will ensure that feedback is provided on each homework, projects, and final report. Aside from the feedback, certain percentage of the grade will be awarded to students for active participation in the classroom, project activities, and through communications on Discord created for this course. The categorization of the grades include:

- Class activities participation 15%
- Homework 15%
- Projects 50%
- Final presentation and reports 20%

### **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 encouraged both during and outside of the classroom.
- 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.

### **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 of 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.

## **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/>. As a result, the instructor 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. 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. An instructor can also involve the Office of the Dean of the School of Computing and Information Sciences for further action. For further information, read the [School of Computing and Information Science students handbook](#).

### **Diversity and Disability**

Willamette University values diversity and inclusion; from my background, I have promoted diversity in several ways and now that I'm in Willamette where there is commitment to diversity and inclusion, we will ensure a climate of mutual respect and full participation. Our goal is to create learning environments that are 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 the professor (in this case Fred) as soon as possible. Students with disabilities are also encouraged to contact the Accessible Education Services office in Matthews 103 at 503-370-6737 or [accessible-info@willamette.edu](mailto:accessible-info@willamette.edu) to discuss a range of options to removing barriers in the course, including accommodations

## Tentative Course Outline:

Lecture & Week	Topics	Month & day	Weekly Readings	Due Dates & Remarks
Lecture 1	Kickoff + Introduction to HCI and Sustainability	August 27	(1) <i>Harlem Brundtland's UN Report (Ch 1)</i> (2) ICT sustainability from day one by <i>Brooks</i>	
Lecture 2	Sustainability in Computing Education and HCI Genres	Sept 3	(1) Sustainability in Computing Education- SLR-Peters at al. (2) DiSalvo & Sengers's genres of HCI	
Lecture 3	Principles of Sustainable Design	Sept 10	Sustainability Design by Tomayess and Pedro (Ch 1 & 2)	Sep 9: Add/drop
Lecture 4	User-Centered Design (UCD), Guidelines, Principles, and Theories	Sept 17	Sustainability Design by Tomayess and Pedro (Ch 3, 5)	Sep 19: Withdraw
Lecture 5	Design process, Green IT and Sustainable Computing	Sept 24	Taste the Green IT by Sanchez (Ch 1-4)	
Lecture 6	Persuasive Design: Principles and Application to Green IT Projects	Oct 1	(1) Green Computing by Piotr (2) Hands-on Project	
Lecture 7	Design Methods and Case Studies	Oct 8	(1) Sustainability Design by Tomayess and Pedro (Ch 6) (2) Research Methods in Computing by Holz et al.pdf	October 14 Deliverable #2 is due
Lecture 8	Midterm presentation, Users eXperience, Interfaces and Ethics	Oct 15	(1) <a href="#">Ethics Pathways in HCI Research (PDF)</a> (2) LLMs for Learning HCI Techniques ( <a href="#">PDF</a> )	Mid-term
Lecture 9	Interactions and Interactivity (Virtual vs Web Experiences)	Oct 22		
Lecture 10	UCD Prototyping	Oct 29	<a href="#">Norman's persuasive design</a>	
Lecture 11	Usability Study	Nov 5		
Lecture 12	Communication and Reporting	Nov 12	Exercise: Teaching Ethics & Activism in HCI ( <a href="#">PDF</a> )	
Lecture 13	Project mentorship	Nov 19		
Week of fall break (No class)		Nov 26		
Lecture 14	Finals: Project Presentation	Dec 3		