Lahore University of Management Sciences

Lahore University of Management Sciences

CS 466/CS 5613 – Human-computer Interaction

Spring2024

Subject to Change

COURSE DESCRIPTION
This course offers a thorough introduction into both the underlying theories of human-computer interaction and the practical application of these insights. This course will equip students with tools and techniques required to design user-friendly interactive systems. This is not a programming-intensive course but students are expected to develop working prototypes. The point of departure for this course is the design of everyday things. It will be shown that the principles underlying the design of such artifacts also apply to the design of the digital media/interactive systems/software. It will then be shown how concepts such as usability and utility may be defined and operationalised, and how the user centered design process may contribute to the achievement of optimal results from a usability and utility perspective. After this, the user interface development process also known as User-centered design (UCD) process will be discussed in detail. The group project is the focal point of this course and will be based on the UCD process. Although, this is course is offered under the the computer science track, it is relevant for students with the background in Business and Economics.

Course Distribution	
Core	
Elective	Yes
Open for Student Category	Junior, Senior, Graduate
Close for Student Category	Freshmen

COURSE PREREQUISITE(S)	
•	Calculus-I, or Calculus with Theory

Instructor	Suleman Shahid
Room No.	SBASSE 9-G46A
Office Hours	
Email	suleman.shahid@lums.edu.pk
Telephone	042-35608192 (from inside campus dial 8192)
Teaching Fellow/TAs	
TA Office Hours	
Course URL (if any)	

Course Basics				
Credit Hours				
Lecture(s)	Nbr of Lec(s) per week	2	Duration	75 minutes per lecture
Recitation/Lab	Nbr of Lec(s)		Duration	
Tutorial	Nbr of Lec(s)		Duration	

Lahore University of Management Sciences

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)	
PEO-01	Demonstrate excellence in profession through in-depth knowledge and skills in the field of Computing.
PEO-02	Engage in continuous professional development and exhibit quest for learning.
PEO-03	Show professional integrity and commitment to societal responsibilities.

COURSE OBJECTIVES	
	At this end of this course, students should
1.	be aware of Interface Design/Usability Engineering as a field
2.	have read and understood major HCI theories and design principles
3.	have gone through three major phases (User research, Design and Evaluation) of user-centered design cycle
4.	be able to apply theories and design principles during the product design process
5.	have some ideas for how to deal with real-world constraints for building effective user interfaces and applications (apps).

COURSE LEARNING OUTCOMES (CLOs)	
	Students will gain a hands-on experience with the user interface design process (user research, design, development and evaluation). After taking this course, students will be able to critique everyday user interfaces, and challenge their own 'design intuition'. Students will also have an idea about understanding users' problems, designing usable user interfaces and evaluating these user interfaces with end users.

CLO	CLO Statement	Bloom's Cognitive Level	PLOs/Graduate Attributes (Seoul Accord)
CLO1	**Enabling Knowledge:** Understating the key HCI theories and design principles for designing user-friendly solutions	C1	PLO2, PLO5
CLO2	**Critical Thinking and Analysis:** Ability to observe users in their working environment and analyze their work practices/usage behavior in a creative and critical manner to identify (possible) problems	C4	PLO3
CLO3	**Problem Solving:** Ability to design and implement digital interactive systems in a creative manner to solve everyday users' problems, based on in-depth analysis of users' needs.	C6	PLO4
CLO4	**Communication:** Ability to explain their ideas to diverse stakeholders (end users, team members, business manager and technical managers)	C5	PLO7
CLO5	**Responsibility:** Ability to apply relevant ethical considerations while conducting user research, designing user centered technologies and evaluating end products, particularly while working with special user groups i.e. children, elderly, and patients.	C5, C6	PLO7, PLO9

Grading Breakup and Policy

Assessment	**Weight (%)**	**Related CLOs**
Quizzes and in-class activities + participation	25%	CLO1 – CLO3
Individual assignments	15%	CLO1 – CLO5
Group project (5 phases and deliverables)	60%	CLO1 – CLO5
Extra credit (optional HW)	5%	CLO1 – CLO3

Lahore University of Management Sciences

Examination Detail	
Midterm Exams	No midterm -> Replaced with quizzes and individual assignments
Group Project	The group project is the focal point of this course. The project is divided into four phases and every phase will have a separate deadline – starting from the user research phase and ending at the final presentations
Final Exam	No final exam -> The course is based on a semester long project and there will be five major deadlines during the course where individual contributions will matter.
Teaching methodology	Synchronous lectures during the class timings (recorded and shared via YouTube in a form of smaller videos)

COURSE OVERVIEW

Week/ Lecture/ Module	Topics	Recommended Readings	Objectives/ Application	Related CLOs
1	Introduction to HCI Course Logistics and assignment details	Slides, Section 1.1 – 1.4		CLO1, CLO2
2	Good and Bad design Design principles	Slides, Section 1.1 – 1.4		CLO1, CLO2, CLO3
3	User-centered design (UCD) process	Slides, Section 1.1 – 1.4, Section 2.1-2.2		CLO1, CLO3
4	HCI theories (Cognition and HCI)	Slides, Section 2.1 – 2.2, 2.3		CLO1, CLO3
5	Conducting user research	Slides, Section 2.3 – 2.4		CLO2
6	Conceptual design (from requirements to design)	Slides, Section 2.4		CLO1, CLO2, CLO3
7	Prototyping Wireframe prototypes	Slides, Section 1.5 – 1.7		CLO3
8	Project review and presenting week	Slides, Section 1.5 – 1.7, Chapter 4		CLO4
9	Visual design Principles and guidelines	Slides, Section Chapter 4		CLO2, CLO3
10	Evaluation using heuristics	Slides, Chapter 8, Section 5.1 – 5.5		CLO2, CLO3
11	Usability engineering process Usability evaluation	Slides, Section 7.1 – 7.2		CLO1, CLO2, CLO3
12	Designing for diverse platforms and audiences Advance HCI methods	Slides, Section 7.5,		CLO3, CLO4
13	Current trends in HCI (Topics from CHI AND UIST)	Slides, Chapter 9,		CLO3, CLO5
14	Presenting to business and technical audience Final presentations and demos	Slides, Section 10.1- 10.2, 10.4-10.5		CLO4, CLO5

Lahore University of Management Sciences

Textbook(s)/Supplementary Readings
Chapters from following textbooks: 1. Norman, D., The Design of Everyday Things, Doubleday, 2002, ISBN 0-385-2677-6. 2. Helen Sharp, Yvonne Rogers, Jenny Preece, Interaction Design: Beyond Human-Computer Interaction, Wiley Publishers, 2013, ISBN 978-0-470-01866-8. 3. Cooper, A. About Face 3: The Essentials of Interaction Design, Wiley Publishers, 2007, ISBN 978-0470084113 Articles: 1. Online articles will be provided after each lecture. Reference Material: Will be provided at the end of each lecture.

Appendix A
Bloom's Taxonomy

BLOOM's TAXONOMY*	
1 - Remember 2 - Understand 3 - Apply 4 - Analyze 5 - Evaluate 6 - Create	• Recall facts and basic concepts • Explain ideas or concepts • Use information in new situations • Draw connection among ideas • Justify a stand or decision • Produce new or original work

https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/