

Human Computer Interaction

Code CS - 261	Credit Hours 2-1
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Course Description

The Association for Computing Machinery (ACM) defines Human-Computer Interaction (HCI) as "a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them". An important goal of HCI is ensuring user satisfaction while interacting with a computing system. Because HCI studies a human and a computer in communication, the multi disciplinary nature of HCI draws from a number of supporting fields, such as computer graphics, information visualization, programming, psychology, human factors, etc. This course will teach how a human centered approach could lead to effective human-computer interaction.

Text Book

Alan Dix et al. "Human-Computer Interaction". 2009. Pearson Education.

Reference Book

Helen Sharp et al. "Interaction Design: Beyond Human-Computer Interaction". 2011 (3rd edition). John Wiley & Sons.

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10%
Assignments	10%
Mid Terms	35%
ESE	45%

ASSESSMENT SYSTEM FOR LAB

Assignment/ Quiz	5% - 10%
Lab Work and Report	60% -70%
Lab ESE/Viva	20%

Teaching Plan

Week No	Topics	Learning Outcomes
1	Introduction	Course Outline, objectives, teaching plan, assessment method, concepts review

2-6	Principles of Interface Design	Introduction to Human factors in interface design. Understanding of perception, cognition, limitations, memory. Study of design principles, FURPS and FURPS+ Desirable properties of an effective user interface. Study of number of clicks, eye tracking, feedback, scenarios, screen recording, etc.
7-8	Establishing requirements for the interface	Gathering user requirements, creating scenarios, personae. Collecting requirements, establishing the requirement document.
9	MID TERM EXAM	
10-12	Navigation and interface layouts	Types of interfaces and their applicability, navigation layouts, navigation styles. Enhancing the interactivity and element choices with respect to the target environment.
13-17	Interface testing	Creating the interface using high fidelity and low fidelity interfaces. Horizontal and vertical prototyping. E.g. wizard of oz prototyping, pen and paper prototyping and storyboarding Executing the interface evaluation. Comparison of questionnaires, lab testing, real environment based evaluation. Understanding the time, resource and fidelity balance.
18	END SEMESTER EXAM	

Practical

Experiment No	Description
1	Examine comprehensive usage scenarios for both Qalam and LMS in the context of HCI
2	Explore the UI/UX design tools i.e. Blasmic, Pencil, Axure, Figma, Adobe XD etc as systems for high fidelity design.
3	Creation of story line for a comprehensive application incorporating a chatbot for various industry verticals. Consider the core users, their abilities, limitations and experiences
4	Identify relevant Don Norman Design principles applicable to the selected chatbot based application. Utilize relevant guidelines and score the chatbot application against the core principles.
5	Apply relevant FURPS and FURPS+ principles applicable to the selected application. Utilize relevant guidelines and score the application against core principles.
6	Establish user interface requirements for the application using renowned software engineering practices (part 1)
7	Extend the user requirements and establish user personae and scenarios applicable to the application of choice (part 2).
8	Considering the application of choice, logically identify and comprehend navigation designs.
9	Design and create interactive sketches using low fidelity prototyping technique for the application of choice.
10	Design and create interactive designs using high fidelity prototyping technique for the application of choice.
11	Iteratively develop and refine a horizontal prototype for the application of choice. Incorporate all relevant design principles, scenarios, etc.
12	Test the designed application for flaws and navigation problems. Gain feedback from peers and incorporate suggestions/ improvements iteratively.

13	Use the metrics (where applicable) error rate, task success, conversion rate, satisfaction and retention rate, to evaluate the application and indicate possible improvements or enhancements. Explain how the metrics have been tested.
14	Use the metrics (where applicable) completion rate, customer effort score, engagement, and loading time to evaluate the application and indicate possible improvements or enhancements. Explain how the metrics have been tested.
15	Project Presentations
16	Project Presentations