East West University
Department of Computer Science and Engineering
Course Outline
Spring 2025

Course: CSE428 - Human Computer Interactions

Credits and Teaching Scheme

	Theory	Laboratory	Total
Credits	3	1	4
Contact Hours	3 Hours/Week for 12 Weeks + Final Exam in the 13th Week	2 Hours/Week for 12 Weeks	5 Hours/Week for 12 Weeks + Final Exam in the 13th Week

Prerequisite

CSE412 Software Engineering

Instructor Information

Instructor: **Yasin Sazid**
Lecturer, Department of Computer Science and Engineering
Office: Room AB1-203
Tel. No.: +8801752571737, Ext. N/A
E-mail: yasin.sazid@ewubd.edu

Course Objective

The objective of this course is to introduce students to the principles and practices of Human-Computer Interaction (HCI). Students will learn methods for user-centered design, understand human factors, explore prototyping and evaluation techniques, and consider the societal implications of technology. The course aims to prepare students to design, build, and critically assess interactive systems for real-world applications.

Knowledge Profile

K3 (Theory-based engineering fundamentals): A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline

K4 (Forefront engineering specialist knowledge for practice): Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline

K5 (Engineering design): Knowledge that supports engineering design in a practice area.

K7 (Comprehension of engineering in society): Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity; economic, social, cultural, environmental, and sustainability.

Learning Domains

Cognitive - C2: Understanding, C3: Applying, C4: Analyzing, C5: Evaluating C6: Creating
Psychomotor - P2: Manipulation, P3: Precision
Affective - A2: Responding, A3-Valuing

Program Outcomes (POs)

PO3: Design/Development of Solutions (Cognitive, Affective)
PO5: Modern Tool Usage (Psychomotor, Cognitive)
PO6: The Engineer and Society (Affective, Cognitive)
PO8: Ethics (Affective)

Complex Engineering Problem Solution

EP1: Depth of knowledge required
EP2: Range of conflicting requirements
EP3: Depth of analysis required
EP4: Familiarity of issues

Complex Engineering Activities

None

Course Outcomes (COs) with Mappings

After completion of this course, students will be able to:

CO	CO Description	PO	Learning Domains	Knowledge Profile	Complex Engineering Problem Solving
CO1	**Apply** and **analyze** user-centered design principles to analyze and design interactive systems.	PO3	C2, C3, C4	K3, K4	-
CO2	**Conduct** user research and task analysis to inform design decisions.	PO3, PO6	C3, C4	K5, K7	-
CO3	**Develop** and **evaluate** low-fidelity and high fidelity prototypes through iterative processes.	PO3, PO5	C5, C6, P2, P3	K5, K7	EP1, EP2
CO4	**Critically assess** interfaces considering societal implications, accessibility, and ethics.	PO6, PO8	A2, A3	K7	EP3, EP4

Course Topics, Teaching-Learning Method, and Assessment Scheme

<table>
<tr><th rowspan="2">Course Topic</th><th rowspan="2">Teaching-Learning Method</th><th rowspan="2">CO</th><th colspan="3">Mark of Cognitive Learning Levels</th><th rowspan="2">Exam (Mark)</th></tr>
<tr><th>C2</th><th>C3</th><th>C4</th></tr>
<tr><td>1. Introduction to HCI: What is HCI, Why is interaction design hard, Necessity of studying HCI

2. Design Process: Iterative design, Spiral model, Design diamond, Parallel and serial design

3. Ideation and Critique: Design ideation, Creativity, Design fixation, Parallel vs serial prototyping, Collaborative ideation, Design critique

4. HCI Design Principles: Learnability, Affordance, Recognition, Metaphor, Consistency, Mapping, Visibility, Safety, Efficiency, Fitt’s law

5. User Research: User research methods (observational vs self-report), Design thinking, Design empathy, User research guideline</td><td>Lecture, Class Discussion, Discussion outside class with Instructor/ TA</td><td>CO1

CO2</td><td>10</td><td>10</td><td>5</td><td>Midterm Assessment Exam (25)</td></tr>
<tr><td>1. Task Analysis: Task analysis questions, Selecting tasks, Using tasks in a design

2. Prototyping: Low fidelity vs high fidelity prototyping, Sketching, Rapid prototyping, Storyboards, Paper prototyping,

3. Interface Evaluation: Interface evaluation methods (UI inspection, Usability testing, Formal user testing), Heuristic evaluation (Nielsen’s 10 heuristics, Heuristic evaluation process)
4. Visual Design: Graphic design principles (Contrast, Repetition, Alignment, Proximity), Gestalt principles, Color (Saturation, Color vision deficiency, Color guidelines), Typography (Text spacing, Font selection)</td><td>Do</td><td>CO3

CO4</td><td></td><td>20</td><td>10</td><td>Final Exam (30)</td></tr>
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5. Ethical and Societal Implications: Unintended consequences of design, Dark patterns, Guarding against negative societal impacts, Designing for diversity and accessibility						

Laboratory Experiments and Assessment Scheme

Experiment	Teaching-Learning Method	CO	Mark of Cognitive Learning Levels		Mark of Psychomotor Learning Levels		Mark of Affective Learning Levels		CO Mark
			C5	C6	P2	P3	A2	A3	
1. Sketching interface concepts (hand-drawn sketches) 2. Paper prototyping (interactive screen flows using paper models) **3.** Prototyping with Figma (creating pages, layers, components, component properties, interactions, styles, style guides)	Lab Experiment and Result Analysis and Discussion with Instructor, Post-Lab Report	CO3	2	2	2	1	2	1	10

Mini Project

Teaching-Learning Method	CO	Mark of Cognitive Learning Level		Mark of Psychomotor Learning Levels		Mark of Affective Learning Level		CO Mark
		C5	**C6**	**P2**	**P3**	**A2**	**A3**	
Team-based development of an interactive system with user research, design artifacts, and evaluation report	CO2, CO3, CO4	4	3	2	2	2	2	15

Overall Assessment Scheme

Assessment Area	CO				Total
	CO1	**CO2**	**CO3**	**CO4**	
Class Test	05	05	-	-	10
Midterm Assessment Exam	20	05	-	-	25
Final Exam	-	05	20	05	30
Laboratory Performance	-	-	10	-	10
Assignment	-	-	05	-	05
Mini Project with presentation and report	-	05	10	05	20
Total	**25**	**20**	**45**	**10**	**100**

Teaching Materials/Equipment

Reference books:

1. Interaction Design: Beyond Human-Computer Interaction by Yvonne Rogers, Helen Sharp, Jenny Preece (6th Edition)
2. Human-Computer Interaction Handbook by Julie A. Jacko (Ed.) (3rd Edition)

Notes:

- **Late report submission will suffer a penalty rate of 20% per day, up to 5 days (weekends count towards the 5 days).** Report submissions that are more than 5 days late are penalized by 100%.
- **STRICTLY NO COPYING** from others.

Grading System

Marks (%)	Letter Grade	Grade Point	Marks (%)	Letter Grade	Grade Point
80-100	A+	4.00	55-59	B-	2.75
75-79	A	3.75	50-54	C+	2.5
70-74	A-	3.5	45-49	C	2.25
65-69	B+	3.25	40-44	D	2
60-64	B	3.00	Below 40	F	0.00

Academic Code of Conduct

Academic Integrity:

Any form of cheating, plagiarism, personification, or falsification of a document as well as any other form of dishonest behavior related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offense under the Academic Code of Conduct and **may lead to severe penalties as decided by the Disciplinary Committee of the university.**

Special Instructions:

- Students are expected to attend all classes and examinations. A student MUST have at least 80% class attendance to sit for the final exam.

- Students will not be allowed to enter the classroom after 20 minutes of the starting time.

- For plagiarism, the grade will automatically become zero for that exam/assignment.

- Normally there will be **NO make-up exam**. However, in case of **severe illness, death of any family member, any family emergency, or any humanitarian ground**, if a student misses any exam, the student MUST get approval for a makeup exam by written application to the Chairperson through the Course Instructor **within 48hours**of the exam time. Proper supporting documents in favor of the reason for missing the exam must be presented with the application.

- For the **final exam**, there will be NO makeup exam. However, in case of **severe illness, death of any family member, any family emergency, or any humanitarian ground**, if a student misses the final exam, the student MUST get an approval of **Incomplete Grade** by written application to the Chairperson through the Course Instructor **within 48 hours** of the final exam time. Proper supporting documents in favor of the reason for missing the final exam must be presented with the application. **It is the responsibility of the student to arrange an Incomplete Exam within the deadline mentioned in the Academic Calendar in consultation with the Course Instructor**.

- All mobile phones and smart watches MUST be turned to silent mode during class and exam periods. Students cannot carry any Bluetooth device in the exam hall.

- There is **zero tolerance for cheating** in exams. Students caught with cheat sheets in their possession, whether used or not; writing on the palm, back of calculators, chairs, or nearby walls; copying from cheat sheets or other cheat sources; copying from other examinees, etc. would be treated as cheating in the exam hall. The only penalty for cheating is **expulsion for several semesters as decided by the Disciplinary Committee of the university**.

No mention of AI in HCI, Conversational UIs, Wearables, or VR/AR, which are very hot HCI topics now. Even a brief lecture at the end on "Future Trends in HCI" could make the course feel more updated.