

EE4213: HUMAN-COMPUTER INTERACTION

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Human-Computer Interaction

Subject Code

EE - Electrical Engineering

Course Number

4213

Academic Unit

Electrical Engineering (EE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

CS2311 Computer Programming
or
equivalent

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course introduces students to the fundamental principles and practices of Human-Computer Interaction (HCI). Students will examine the psychological and design theories that inform user interface design, engage in user-centered design methodologies, and acquire proficiency in prototyping and evaluating interactive systems. Through a combination of theoretical study and practical application, students will learn to critically analyze existing interfaces, conceptualize and implement innovative solutions, and conduct usability evaluations. The course emphasizes the application of HCI concepts to real-world scenarios, preparing students to engineer more intuitive, efficient, and user-centric digital products and services.

Course Intended Learning Outcomes (CILOs)

CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Analyze key principles and theories of human-computer interaction and their application in interaction design processes.	x	x	
2	Evaluate the usability of user interfaces using established HCI criteria and guidelines	x	x	
3	Apply human-computer interaction principles to critically assess and improve the design of everyday digital products and interfaces.	x	x	
4	Design and prototype user-centered interfaces that address specific usability challenges and user needs.			x
5	Conduct basic user research and usability testing to inform and validate design decisions.	x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Students engage with core HCI concepts through instructor-led discussions, multimedia presentations, and in-class exercises on interface design principles and usability evaluation methods. Key concepts are worked out based on problems, in-class Q&A, work-along examples rated	1, 2, 3, 4, 5	3 hrs/week
2	Workshops	Students participate in hands-on sessions that combine technical tutorials and design activities. These workshops focus on implementing specific HCI techniques, working on both individual and group design challenges, and engaging in peer feedback and collaborative problem-solving.	1, 2, 3, 4, 5	

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Tests (min.: 1)	1, 2, 3, 4, 5	10
2	#Assignments (min.: 3)	1, 2, 3, 4, 5	60

Continuous Assessment (%)

70

Examination (%)

30

Examination Duration (Hours)

2

Additional Information for ATs

Remarks:

To pass the course, students are required to achieve at least 30% in course work and 30% in the examination.

may include homework, tutorial exercises, projects, presentations

Assessment Rubrics (AR)**Assessment Task**

Examination

Criterion

Achievements in CILOs

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Coursework

Criterion

Achievements in CILOs

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Foundations of Human Computer Interaction

Overview of Human Computer Interaction; Psychology; Human factors; Cognitive neuroscience; Sensory systems and perception; Attention; Memory; Interaction paradigms

Process of Human Computer Interaction Design

User-centered design methodologies; User modeling and persona development; Task analysis techniques; Design thinking; Prototyping; Evaluation; Iterative design process and user feedback integration

Human Computer Interaction Design Examples

Interaction styles; Web and mobile design; Speech and natural language interface; Haptic interfaces and feedback; Augmented and Virtual Reality (AR/VR) interactions; Ubiquitous computing; Inclusive design; Next-generation interface and advanced topics in HCI

Reading List

Compulsory Readings

Title	
1	Nil

Additional Readings

Title	
1	D.Norman, The Design of Everyday Things, Basic Books (2013)
2	J.Preece, Y.Roger and H.Sharp, Interaction Design: Beyond Human-Computer Interaction, 5th Edition, Wiley (2019)