

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

COURSE CONTENT

HUMAN COMPUTER INTERACTION (UI&UX)

Common for CSE | CSE (AI&ML) | CSE (DS) | CSE (CS) | IT | CSIT

Course Code	Category	Hours /Week			Credits	Maximum Marks		
ACDC12	Elective	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes:45	Tutorials Classes: Nil	Practical Classes: Nil				Total Classes: 45		

Prerequisite: Computer Networks

I. COURSE OVERVIEW:

This course is an introduction to Human-Computer Interaction (HCI), 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. The course considers the inherently multi- and interdisciplinary nature of HCI and situates various HCI issues in the organizational and societal contexts. It introduces theories of human psychology, principles of computer systems and user interfaces designs, a methodology of developing effective HCI for information systems, and issues involved in using technologies for different purposes. It is intended to give students an overview of the entire HCI field by covering most aspects of it. This course will thus provide a background for students to practice system design, selection, installation, evaluation, and use with the knowledge of human characteristics, interaction styles, use context, task characteristics, and design processes.

II. COURSE OBJECTIVES:

The students will try to learn:

- I. The Essentials of designing interactive systems
- II. The different Techniques for designing interactive systems
- III. The Contexts for designing interactive systems
- IV. The important aspects of implementation of human-computer interfaces.
- V. Identify the various tools and techniques for interface analysis, design, and evaluation.

III. SYLLABUS:

MODULE -I: ESSENTIALS OF DESIGNING INTERACTIVE SYSTEMS (09)

Designing interactive systems: a fusion of skills: The variety of interactive systems - The concerns of interactive systems design-Being digital-The skills of the interactive systems designer-Why being human-centered is important; The process of human-centered interactive systems design: Introduction- Developing personas and scenarios- Using scenarios throughout design - A scenario-based design method.

MODULE -II: TECHNIQUES FOR DESIGNING INTERACTIVE SYSTEMS (09)

Understanding: Understanding requirements- Participative design- Interviews- Questionnaires- Probes- Card sorting techniques-Working with groups - Fieldwork: observing activities in situ - Artefact collection and 'desk work'; Envisionment: Finding suitable representations- Basic techniques- Prototypes- Envisionment in practice; Design Introduction-Conceptual design- Metaphors in design- Conceptual design using scenarios - Physical design-Designing interactions; Evaluation Introduction -Expert evaluation -Participant-based evaluation - Evaluation in practice -Evaluation: further issues

MODULE -III: VISUAL INTERFACE DESIGN, MULTIMODAL INTERFACE DESIGN (09)

Visual interface design: Introduction, Graphical user interfaces, interface design guidelines, psychological principles and interface design, information design, visualization.

Multimodal interface design: Introduction, interacting in mixed reality, using sound at the interface, tangible interaction, gestural interaction and surface computing

MODULE -IV: CONTEXTS FOR DESIGNING INTERACTIVE SYSTEMS (09)

Designing websites 3io: Introduction, website development, the information architecture of websites, navigation design for websites; Case study: designing the Robert Louis Stevenson website; Social media: Introduction, background ideas, Social networking, Sharing with others, the developing web; Collaborative environments: Introduction, issues for cooperative working, technologies to support cooperative working, collaborative virtual environments; Case study: Developing a collaborative tabletop application.

MODULE -V: UBIQUITOUS COMPUTING, MOBILE COMPUTING, WEARABLE COMPUTING (09)

Ubiquitous computing: Information spaces, blended spaces, home environments, navigating in wireless sensor networks; Mobile computing: Introduction, context awareness, understanding in mobile computing, designing for mobiles, evaluation for mobile computing; Wearable computing Introduction: Smart materials, material design, from materials to implants.

IV. TEXTBOOKS:

1. David R. Benyon, “Designing Interactive Systems: A Comprehensive Guide to HCI, UX and Interaction Design”, Pearson; 3rd Edition, 2013.
2. James Cabrera, “Modular Design Frameworks: A Projects-based Guide for UI/UX Designers”, APress, 1st Edition, 2017.
3. Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, “Human Computer Interaction”, Pearson Education, 3rd Edition, 2004.

V. REFERENCE BOOKS:

1. Ben Schneiderman, “Designing the User Interface”, Pearson Education Asia, 3rd Edition, 2013.
2. Prece, Rogers, Sharps, “Interaction Design”, Wiley Dreamtech.
3. SorenLauesen, “User Interface Design”, Pearson Education.
4. D. R. Olsen, “Human –Computer Interaction”, Cengage Learning.
5. Smith –Atakan, “Human –Computer Interaction”, Cengage Learning

VI. WEB REFERENCES:

1. http://staff.fit.ac.cy/com.ph/vp/VP_Lecture_2.pdf
2. <https://fac.ksu.edu.sa/nmalmobarak/course/41031>
3. https://www.tutorialspoint.com/human_computer_interface/quick_guide.html