Title of Course: Human Computer Interaction

Code and Credit Structure: IE403, 3-0-2-4

Course Placement: ICT & Technical Elective (RAS minor)

Course level: Undergraduate

Instructors: Prof. P.S. Kalyan Sasidhar,
Office: 2109, Faculty Block 2, Extn. 560
Email: kalyan_sasidhar@daiict.ac.in

Aims and Objectives:

This course will dive into the fundamentals of how man machine interaction happens and the principles governing the interactions. We will also look at how HCI relates to other fields like user experience design, user interface design, human factors engineering, and psychology. We will learn the three different roles of a user in interface design namely the 'processor' view, the 'predictor' view, and the 'participant' view. The course will cover human capabilities, design principles and models, prototyping and evaluation techniques. Emphasis will be given on learning and developing prototypes of various software modules, products etc.

Course outcomes:

At the end of the course, students will understand:

1. The relationship between HCI, user experience design, human factors engineering, and psychology.

2. The feedback cycle in user interaction, including gulfs of execution and evaluation.

3. Various Interaction design principles and heuristics in user interface design.

4. The emerging ideas in HCI research, such as context-sensitive computing, gesture-based interaction, and social computing.

Program outcomes

P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
X	X	X		X							X

Evaluation Scheme:

In-Sem	20%
Project	40%
Lab	20%
Quiz	10%
Assignments	10%

Textbook:

A. Dix, J. Finlay, G. D. Abowd, R. Beale, "Human Computer Interaction", Pearson Education, 2005.

Reference Textbooks:
- Mirel, Barbara, "Interaction design for complex problem solving: Developing useful and usable software", Morgan Kaufmann, 2003.
- Cooper, Alan, "Essentials of User Interface Design", Wiley-dreamtech India, 2002
- Yvonne Rogers, Helen Sharp and Jenny Preece, "Interaction Design - Beyond Human-Computer Interaction", 3rd Edition.

Course Conduct and Grading Policy

1. Students are supposed to be present for all lectures and lab sessions.
2. If the attendance falls below 70%, a student will receive an F grade. (An institute-wide detailed policy will be communicated separately and will supersede this, once that takes effect)
3. **All lab assignments must be completed**, failing which zero marks will be awarded for the lab component. One makeup lab session will be scheduled at the end of the semester for students who miss a session due to any reason. For special medical cases, if the Dean, AP has approved their application, additional makeup sessions may be provided to the concerned students.
4. If a case of plagiarism/copying is detected in the exams or lab submissions, then that student will **receive zero marks** in the **complete lab segment (30%)** or the respective **exam component**. The student will also be reported to the Dean AP for possible further actions.

Lecture Outline:

S.No	Description	Num of lectures
1	INTRODUCTION	4
	1.1 Introduction	
	1.2 History of HCI	
	1.3 HCI and its elements	
	1.4 Applications of HCI	
2	USER CENTERED DESIGN RULES	8
	2.1 Principles of HCI	
	2.1.1 Norman's psychopathology of things	
	2.1.2 Jacob Nielsen's principles	
	2.2 Introduction to User Centered Design (UCD)	
	2.3 Methods and procedures in UCD	
3	Interactive System design	10
	3.1 Models of interaction	
	3.1.1 Mental vs Conceptual model	
	3.1.2 Gulf of Execution and Gulf of Evaluation	
	3.2 Model based design	
	3.2.1 KLM	
	3.2.2 GOMS	
	3.2.3 Fitt's Law	
	3.2.4 Hick-Hynman law	
4	TASK ANALYSIS	4
	4.1 Differeces between task analysis and & other techniques	
	4.2 Types of Task analysis techniques	
	4.3 Uses of Task analysis	
	4.4 Use case examples of task analysis	
5	PROTOTYPING	6
	5.1 Low fidelity	
	5.2 High fidelity	
6	EVALUATION TECHNIQUES	6
	6.1 Why evaluation?	
	6.2 Evaluation through user participation	
	6.3 Evalution through expert analysis	
7	Virtual and Augmented reality	4
	7.1 Introduction	
	7.2 Case studies	

Labs:

Laboratory exercises will typically involve group based discussions, applying principles taught in lecture to real world objects/things/interfaces. The exercises will evolve as per the lecture material.