

Subject Code: 1ET1100104	Subject Title: Human Computer Interaction
Pre-requisite	Fundamentals of Object Oriented Technology, Web technology

Course Objective:

This course will enable students: To recognize and recall terminology, facts and principles For example, students can define 'direct manipulation' and list some of its strengths and weaknesses as an interaction style. To determine the relationships between specific instances and broader generalizations. For example, students can determine which parts of a system exhibit direct manipulation features and can explain why a change in the system produced different properties. To use concepts and principles to explain, analyze and solve specific situations, often with the applicable concepts implicit in the setting. For example, students can redesign part of an interface to exhibit direct manipulation style and predict the likely effects of the change To apply course content in coping with real life situations. These differ from directed applications by having less structured questions and issues, no direction as to which concepts will be applicable and a range of potentially acceptable answers. For example, students can design an interface for real tasks and users which incorporates direct manipulation in appropriate ways (and evaluate/defend their choices).

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	1	2	5	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Introduction to HMI. Natural communication, multimodality, types of human machine interfaces	9	18
2	Human perception and recognition. Psychology of users, attention, thinking, perception of visual, sound and haptic incitements.	5	10
3	Concept of combined reality, virtual reality, technologies, existing scientific and commercial projects. Sensing and tracking. Sensors for sensing of fingers, hands and touching. Interactive digital surfaces, manipulation of digital objects, displays with rear projection.	4	08
4	Multimodal speech interface. Basics of multimodal dialog systems. Speech synthesis. Speech recognition. Talking head.	4	06
5	Interface based on gestures. Sensing of movement, controlling by movement, examples of the interfaces. Sound interaction. Basics of acoustics	6	16
6	Design -Case Studies Case Study 1- Multikey press Hindi Text Input Method on a Mobile Phone. Case Study 2 – GUI design for a mobile phone based Matrimonial application. Case Study 3 –Employment Information System for unorganized construction workers on a Mobile Phone.	8	16

Course Outcome:

Course Outcome: On completion of this course according to course goals, the student should be able to:

1. Understand the basics of human and computational abilities and limitations.

2. Understand basic theories, tools and techniques in HMI.
3. Understand the fundamental aspects of designing and evaluating interfaces.
4. Practice a variety of simple methods for evaluating the quality of a user interface.
5. Practice a variety of simple methods for evaluating the quality of a user interface.

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the basics of human and computational abilities and limitations.	2. Understanding
CLO2	Understand basic theories, tools and techniques in HMI	1. Remembering
CLO3	Understand the fundamental aspects of designing and evaluating interfaces.	1. Remembering 2. Understanding
CLO4	Practice a variety of simple methods for evaluating the quality of a user interface.	3. Applying, 2 Understanding
CLO5	Practice a variety of simple methods for evaluating the quality of a user interface.	5,3, 4 Evaluate , Applying, Analyze
CLO6	Interpret the methods for evaluating the quality of a user interface	6. Creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	M	L	L						M				H			L
CLO2	M	L	L						H				M			
CLO3	M	L	L						M		H		H			
CLO4	M	L	L						M		H		L		H	
CLO5	M	L	M				H					H			M	

CLO6	M	L	L						M			L		H		
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H: High, M: Medium, L: Low

List of Book References:

1. Dix A., Finlay J., Abowd G. D. and Beale R. Human Computer Interaction, 3rd edition, Pearson Education, 2005.
2. Preece J., Rogers Y., Sharp H., Baniyon D., Holland S. and Carey T. Human Computer Interaction, Addison-Wesley.
3. B. Shneiderman; Designing the User Interface, Addison Wesley 2000 (Indian Reprint).

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Sr. no.	Practical Exercise
1.	Design Screen and Mockup for The Student Information System for SPU.
2.	The Client Needs to Design the Web for the Matrimony Application. Design wireframes and get the approval.
3.	The State Bank of India needs to develop the Recharge Portal for the DTH Operators. Get the Mockup ready for them with all the required flow.
4.	The Client from the well-known automobile industry, developing AI based dashboard for the new Upcoming car. Design the Mockup for all Car functions with all required features.
5.	Prepare the Concept Design for new Self Checking Kiosk for the Indian Railway.
6.	The German Government wants to develop automatic Ticket vending machines for the Metro Railway.
7.	Well-known music company wants to develop touch based Music Kioske with Headphones to listen to the upcoming tracks and place them at various Malls. Design the Music Application Interface for the user to listen to new tracks for free and also give feedback.
8.	Conceptualize Design for the Smart Glasses Wearable device.
9.	Conceptualize the Design for the Interface for Smart Watch.
10.	Design the Machine Interface to Monitor Voltage, Current and Flow meter with alarm status and required buttons to control Gates of Sardar Sarovar DAM.
11.	Design a Wireframe for E-Commerce Portal.