Subject Code:	Human Computer Interaction	L,T,P,J,C 3,0,0,4,4
Objectives	To provide the basic knowledge on the levels of interaction, design models, techniques and validations focusing on the different aspects of human-computer interface and interactions.	
Expected Outcomes	After successfully completing the course the student should be able to 1. Design and Develop processes and life cycle of Human Computer Interaction 2. Analyze product usability evaluations and testing methods. 3. Apply the interface design standards/guidelines for cross cultural and disabled users. 4. Facilitate communication between students of psychology, design, and computer science on user interface development projects. 5. Provide the future user interface design with concepts and strategies for making design decisions.	
Student Learning Outcomes	1. Having Sense-Making Skills of creating unique insights in what is being seen or observed 2. Having design thinking capability 3. Having an ability to design a component or a product applying all the relevant standards and with realistic constraints 4. Having Virtual collaborating ability 5. Having an ability to design and conduct experiments, as well as to analyze and interpret data 6. Having an ability to use techniques, skills and modern engineering tools necessary for engineering practice 7. Having critical thinking and innovative skills	

MODULE	TOPICS	L HRS	SLO
1	**HCI FOUNDATIONS** Input–output channels, Human memory, Thinking: reasoning and problem solving, Emotion, Individual differences, Psychology and the design of interactive systems, Text entry devices, Positioning, pointing and drawing, Display devices, Devices for virtual reality and 3D interaction, Physical controls, sensors and special devices, Paper: printing and scanning	6	4,5
2	**DESIGNING INTERACTION** Overview of Interaction Design Models, Discovery - Framework, Collection - Observation, Elicitation, Interpretation - Task Analysis, Storyboarding, Use Cases, Primary Stakeholder Profiles, Project Management Document	6	6

3	**INTERACTION DESIGN MODELS** Model Human Processor - Working Memory, Long-Term Memory, Processor Timing, Keyboard Level Model - Operators, Encoding Methods, Heuristics for M Operator Placement, What the Keyboard Level Model Does Not Model, Application of the Keyboard Level Model, GOMS - CMN-GOMS Analysis, Modeling Structure, State Transition Networks - Three-State Model, Glimpse Model, Physical Models, Fitts' Law	8	6
4	**GUIDE LINES IN HCI** Shneideman's eight golden rules, Norman's Sever principles, Norman's model of interaction, Nielsen's ten heuristics, Heuristic evaluation, contextual evaluation, Cognitive walk-through	6	5
5	**COLLABORATION AND COMMUNICATION** Face-to-face Communication, Conversation, Text-based Communication, Group working, Dialog design notations, Diagrammatic notations, Textual dialog notations, Dialog semantics, Dialog analysis and design	5	17
6	**HUMAN FACTORS AND SECURITY** Groupware, Meeting and decision support systems, Shared applications and artifacts, Frameworks for groupware Implementing synchronous groupware, Mixed, Augmented and Virtual Reality	6	8
7	**VALIDATION AND ADVANCED CONCEPTS** Validations - Usability testing, Interface Testing, User Acceptance Testing Past and future of HCI: the past, present and future, perceptual interfaces, context-awareness and perception	6	14,17
8	**RECENT TRENDS**	2	
	TOTAL HOURS	**45**	
Project Projects may be given as group projects • Evaluating Interfaces of Visual Analytic Tools Video Games • Design Guidelines for Crowdsourcing Emotion Annotations Education Applications • Bus Stop Information Screens Redesign • Redesign of Interactive Websites • Effective E-Books • A System for Online Governance • 3-D Selection of Neural Pathway Estimates Using Simple Mouse Gestures • Interactive E-Learning Project		**60** [Non Contact hrs]	

• Persuasive Mobile Tourists Guide and Planner • Mobile Interfaces for Social Networking • Leveraging Time and Space Context in Mobile Phones • Digital Notecards for Iterative Planning • Context Aware Status/To-do list • A Shared Workspace for Design Project Teams and other applications relevant to HCI		

Text Books

1. A Dix, Janet Finlay, G D Abowd, R Beale., Human-Computer Interaction, 3rd Edition, Pearson Publishers,2008.

Reference Books

1. Shneiderman, Plaisant, Cohen and Jacobs, Designing the User Interface: Strategies for Effective Human Computer Interaction, 5th Edition, Pearson Publishers, 2010.
2. Hans-Jorg Bullinger," Human-Computer Interaction", Lawrence Erlbaum Associates, Publishers
3. Jakob Nielsen," Advances in Human-computer Interaction",Ablex Publishing Corporation
4. Thomas S. Huang," Real-Time Vision for Human-Computer Interaction", Springer
5. Preece et al, Human-Computer Interaction, Addison-Wesley, 1994.

VELLORE INSTITUTE OF TECHNOLOGY
OFFICE OF THE DEAN (ACADEMICS)