

Branch Name:	Information and Communication Technology
Semester/Year:	Semester VII / Final Year
Subject Title:	Human Machine Interface (Elective-II)
Subject Code:	1ET1070704
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 (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	
03	-	-	03	70	30	100

Contents:

Sr. No	Topic	Total Hours	Weight (%)
1	Introduction to HMI. Natural communication, multimodality, types of human-machine interfaces	09	20
2	Human perception and recognition. Psychology of users, attention, thinking, perception of visual, sound and haptic incitements.	06	14
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.	09	15

4	Multimodal speech interface. Basics of multimodal dialog systems. Speech synthesis. Speech recognition. Talking head.	10	26
5	Interface based on gestures. Sensing of movement, controlling by movement, examples of the interfaces. Sound interaction. Basics of acoustics	10	25

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. apply appropriate HMI techniques to design systems that are usable by people.

List of Reference Books:

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, 1994.
3. B. Shneiderman; Designing the User Interface, Addison Wesley 2000 (Indian Reprint).