

COURSE CODE	COURSE TITLE	L	T	P	C
1152CS112	HUMAN-COMPUTER INTERACTION	3	0	0	3

Course Category: Program Elective

A. Preamble:

To introduce the fundamentals of human-computer interaction, user interface design, and usability analysis. Students will learn principles and guidelines for usability, quantitative and qualitative analysis methods, and apply them through critiques of existing interfaces and development of new ones.

B. Pre-requisite

Sl. No	Course Code	Course Name
1	1150MA202	Engineering Mathematics I
2	1151CS109	Theory of Computation

C. Link to Other courses

Sl. No	Course Code	Course Name
1	1156CS601	Minor Project
2	1156CS701	Major Project

D. Course Educational Objective

Students undergoing this course are expected to

- Critically discuss common methods in the user-centered design process and the appropriateness of individual methods for a given problem.
- Use, adapt and extend classic design standards, guidelines, and patterns.
- Employ selected design methods and evaluation methods at a basic level of competence.
- Build prototypes at varying levels of fidelity, from paper prototypes to functional, interactive prototypes.

E. Course Outcomes

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's taxonomy)
CO1	Describe the basics of HCI	K2
CO2	Explain the models used for HCI	K2
CO3	Explain various rules used in HCI	K2
CO4	Describe the Empirical research methods	K2
CO5	Design various Dialog Design used for HCI	K3

Correlation of Cos with Programme Outcomes:

Upon the successful completion of the course, students will be able to:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	M														
CO2	M	H						L						M	
CO3	H			M				M							M
CO4	M		H	M										M	
CO5	M														M

H- Strong; M-Medium; L-Low

F. Course content

UNIT 1 – Introduction

9

Historical evolution of the field – Concept of usability – definition and elaboration – HCI and software engineering – GUI design and aesthetics – Prototyping techniques

UNIT 2 – Model-based Design and evaluation

9

Basic idea, introduction to different types of models, GOMS family of models (KLM and CMN-GOMS)- Fitts' law and Hick-Hyman's law- Model-based design case studies

UNIT 3 – Guidelines in HCI

9

Schneiderman's eight golden rules – Norman's seven principles – Nielsen's ten heuristics with example of its use – Heuristic evaluation – Contextual inquiry – Cognitive walkthrough

UNIT 4 – Empirical research methods in HCI

9

Introduction (motivation, issues, research question formulation techniques) – Experiment design and data analysis (with explanation of one-way ANOVA) – Hierarchical task analysis (HTA) – Engineering task models and Concur Task Tree (CTT)

UNIT 5 – Dialog Design

9

Introduction to formalism in dialog design, design using FSM (finite state machines) – State charts and (classical) Petri Nets in dialog design – Introduction to CA, CA types, relevance of CA in IS design – Model Human Processor (MHP)

TOTAL: 45 Hours

G. Learning Resources

i. Text Book:

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).

ii. Reference Books

1. Preece J., Rogers Y., Sharp H., Baniyon D., Holland S. and Carey T. Human Computer Interaction, Addison-Wesley, 1994.
2. B. Shneiderman; Designing the User Interface, Addison Wesley 2000 (Indian Reprint).
3. Selected research papers (details will be provided at the end of relevant materials).
4. Jacob Nielsen; Useability Engineering; Morgan Kaufmann, Academic Press, London,