COURSE CODE	COURSE TITLE	L	T	P	C
1152IT125	Human Computer Interaction	3	0	0	3

Course Category:

~~Foundation (0) / Program Core (1) /~~ **Program Elective (2)** ~~/ Allied Elective (3) / University Elective (4) /~~ ~~Value Education Elective (5) / Independent Learning (6) / Industry - Higher Learning Institute Interaction (7).~~

a. Preamble

Human-computer interaction, also known as Man-Machine Interaction, is a concept that emerged side by side with computers. If machines are not using by men then they are worthless. The method is traveled a long way by which human has been interacting with computers. The journey still continues and new designs of technologies and systems appear more and the research in this area has been growing very fast in the last some decades. HCI (human-computer interaction) is the study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings. Software engineering focuses on the production of software application solutions, whereas HCI focuses on discovering methods and
techniques that support people. HCI has expanded rapidly and steadily for three decades, attracting professionals from many other disciplines and incorporating diverse concepts and approaches.

b. Prerequisite Courses:

Artificial Intelligence

c. Related Courses:

User Interface Design
Machine Learning

d. Course Educational Objectives:

Students undergoing this course are expected to

- To learn the principles and fundamentals of human computer interaction (HCI).
- To analyze HCI theories, as they relate to collaborative or social software.
- To establish target users, functional requirements, and interface requirements for a given
  computer application.
- To understand user interface design principles, and apply them to designing an interface.
- To learn user interface designs through usability inspection and user models.
- To know the applications of multimedia on HCI.

e. Course Outcomes :

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

CO Nos.	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Interpret the contributions of human factors and technical constraints on human-computer interaction.	**K2**
CO2	Evaluate the role of current HCI theories in the design of software.	**K3**
CO3	Apply HCI techniques and methods to the design of software.	**K3**
CO4	Categorize and carefully differentiate various aspects of multimedia interfaces.	**K2**
CO5	Design and develop issues related to HCI for real application.	**K2**

f. Correlation of COs with POs :

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

- H- High; M-Medium; L-Low

g. Course Content:

UNIT I : DESIGN PROCESS

Humans – Information Process – Computer – Information Process – Differences and Similarities – Need for Interaction – Models – Ergonomics – Style – Context – Paradigms – Designing of Interactive Systems – Usability – Paradigm shift – Interaction Design Basics – Design Process – Scenarios – Users Need –Complexity of Design

UNITII DESIGN AND EVALUATION OF INTERACTIVE SYSTEMS

Software Process – Usability Engineering – Issue based Information Systems – Iterative Design Practices – Design Rules – Maximum Usability – Principles – Standards and Guidelines – Design Patterns – Programming Tools – Windowing Systems – Interaction Tool Kit – User Interface Management System – Evaluation Techniques – Evaluation Design – Evaluating Implementations – Observational Methods.

UNITIII MODELS

Universal Design Principles – Multimodal Systems – User Support – Presentation and Implementation Issues – Types – Requirements – Approaches – Cognitive Model – Hierarchical Model – Linguistic Model – Physical and Device Models – Socio technical Models – Communication and Collaboration Models – Task Models – Task Analysis And Design.

UNIT IV EXPERIMENTAL DESIGN AND STATISTICAL ANALYSIS OF HCI

Basic Design Structure – Single Independent Variable – Multiple Independent Variable – Factorial Design – Split-Plot Design – Random Errors – Experimental Procedure – Statistical Analysis – T Tests – Analysis of Variance Test – Regression – Chi-Square Test – Survey – Probabilistic Sampling – Non-Probabilistic Sampling – Developing Survey Questions.

UNIT V THEORIES

Dialogue Notations and Design – Dialogue Need – Dialogue Design Notations – Graphical – Textual - Representing Dialogue – Formal Descriptions – Dialogue Analysis – System Models – Interaction Models – Relationship with Dialogue – Formalisms – Formal Notations – Interstitial Behavior – Virtual Reality – Modeling Rich Interaction – Status Event Analysis – Properties – Rich Contexts – Sensor-based Systems – Groupware – Applications – Ubiquitous Computing – Virtual Reality

h. Learning Resources

i. TEXTBOOK :

1. Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, "Human Computer Interaction", Third Edition, Prentice Hall, 2004.

ii. REFERENCES:

1. Jonathan Lazar Jinjuan Heidi Feng, Harry Hochheiser, "Research Methods in Human-Computer Interaction", Wiley, 2010.
2. Ben Shneiderman and Catherine Plaisant, "Designing the User Interface: Strategies for Effective Human-Computer Interaction", Fifth Edition, Addison-Wesley Publishing Co, 2009.

iii. Online resources

1.http://www.cs.cmu.edu/~bam/uicourse/special/
2.http://www.dcs.gla.ac.uk/~johnson/teaching/isd/course.html
3.http://en.wikibooks.org/wiki/Models_and_Theories_in_Human-Computer_Interaction
4.http://www.upf.edu/hipertextnet/en/numero-11/experiments_users.html
5.https://www.ischool.utexas.edu/~adillon/BookChapters/User%20acceptance.htm