COURSE TITLE	**HUMAN COMPUTER INTERFACE**
COURSE CODE	**01AI0601**
COURSE CREDITS	**4**

Objective:

1. To give students an understanding of how the study of HCI affects the design of computer systems, both hardware and software. To improve awareness of human factors that determine the usability of systems. To learn how to make GUI interfaces in at least one language.
2. HCI is an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and many other areas. Course readings will span current theory and practice in interface specification, design and evaluation. Students will work on team projects to design, implement and evaluate computer interfaces.
3. To give students an understanding of how the study of HCI affects the design of computer systems, both hardware and software. To improve awareness of human factors that determines the usability of systems. To learn how to make GUI interfaces in at least one language.

Course Outcomes: After completion of this course, student will be able to:

1. Understanding significance and components of human computer interface/interaction. (Knowledge/understand)
2. Being able to choose appropriate input/output devices and techniques (Apply)
3. Being able to analyse tasks in order to produce an HCI design (Analyse)
4. Understanding how to design, prototype and evaluate user interfaces (Apply)
5. Evaluating product lifecycle time essentially the techniques that are used to collect and analyse the data

Pre-requisite of course: To give students an understanding of how the study of HCI affects the design of computer systems, both hardware and software. To improve awareness of human factors that determine the usability of systems. To learn how to make GUI interfaces in at least one language

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction and Interaction Design** Introduction to HCI, Importance of user design, good and poor design, what is interaction design, user experience, process of interaction design, interaction design and the user experience	

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Contents : Unit	Topics	Contact Hours
2	**Understanding and Conceptualizing interaction** Understanding the problem in space, conceptualizing the design space theories, model, and frameworks, what is cognition, cognition framework	
3	**Web Interfaces** Concerns an introduction of the notion of a paradigm, set the scene for how the various interfaces have developed in interaction design, overview of the many different kinds of interfaces, highlight of the main design and research issues for each of the different interfaces, considerations which interface is best for a given application or activity	
4	**Data gathering, analysis, and presentation** Data recording, interviews, questionaries, Observation, Qualitative and quantitative, tools to support data analysis, sing theoretical frameworks	
5	**Interaction Design and Prototyping** What is involved in interaction design, Practical users, Lifecycle models, Prototyping and construction, conceptual design, physical design	
6	**Windows** New and Navigation schemes selection of window, selection of devices based and screen-based controls, components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors	
7	**Software tools** Specification methods, interface building Tools, Interaction Devices Keyboard and function keys, pointing devices, speech recognition, digitization and generation – image and video displays – drivers.	
8	**Evaluation** The three main evaluation approaches, key evaluation methods within the context of real evaluation studies, how the approaches and methods are used for different purposes at different stages of the design process, the practical challenges that evaluators have to consider when doing evaluation	
Total Hours		

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Experiments** Serial position effect for recalling items from word and color lists, Human ability of distinguishing differences in rectangular shapes and computing Weber fraction (K) for various measures -Weber's Law, Applying Fitt's Law in designing and placing widgets on computer interface, Understand interaction efficiency of various numeric keypad layouts, Predict time for performing a task and evaluate user's performance on a specific user interface (UI)., Understand the fundamental properties of color, color wheel and color context, Analyse control panel prototypes for Washing Machine or Induction Stove, Understand icon design heuristics and create icons effectively.	
Total Hours		

Textbook :

1 Research Methods in Human Computer Interaction, Jonathan Lazar Jinjuan Heidi Feng, Harry Hochheiser, Wiley, 2010

References:

1 J. Preece, Y. Rogers and H. Sharp, "Interaction design: Beyond Human-Computer Interaction", John Wiley & Sons , 4/e, 2015, ISBN 9781119088790.

2 Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, Human Computer Interaction, 3rd Edition Prentice Hall, 2004

3 Jonathan Lazar Jinjuan Heidi Feng, Harry Hochheiser, Research Methods in Human Computer Interaction, Wiley, 2010

4 Ben Shneiderman and Catherine Plaisant Designing the User Interface: Strategies for Effective Human-Computer Interaction (5th Edition, pp. 672, ISBN 0- 321-53735-1, March 2009), Reading, MA: Addison-Wesley Publishing Co

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
15.00	25.00	25.00	15.00	15.00	5.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc

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Instructional Method:

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

1 https://nptel.ac.in/courses/106/103/106103115/

2 https://nptel.ac.in/content/syllabus_pdf/106103115.pdf http://codex.cs.yale.edu/avi/os-book/OS9/slide-dir

3 https://hci-iitg.vlabs.ac.in/

4 https://www.udemy.com/course/human-computer-interaction-machine-learning/

5 https://www.edx.org/professional-certificate/gtx-human-computer-interaction

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