

Course Title: Human-Computer Interaction

Credit: 3

Course No: CSIT.425.4

Number of period per week: 3+3

Nature of the Course: Theory+Lab

Total hours: 45+45

Year: Fourth, Semester: Eighth

Level: B. Sc. CSIT

1. Course Introduction

This course presents the foundations of Human-Computer Interaction (HCI) where the contents are structured in Basic definitions and motivations of HCI, including history, theories, interaction paradigms, design principles and models.

2. Objectives

Upon completion of the course, Students will be able to:

- Explain the capabilities of both humans and computers from the viewpoint of human information processing.
- Describe typical human–computer interaction (HCI) models, styles, and various historic HCI paradigms.
- Apply an interactive design process and universal design principles to designing HCI systems.
- Describe and use HCI design principles, standards and guidelines.
- Analyze and identify user models, user support, socio-organizational issues, and stakeholder requirements of HCI systems.

3. Specific Objectives and Contents

Specific Objectives	Contents
<ul style="list-style-type: none">• Understand importance of human computer interaction• Understand the fundamental components of interactive system• Understand the psychological and physiological attributes of the user and computer• Understand historical perspective on the evolution of interactive systems	Unit I: Foundations of Human–Computer Interaction 1.1. Human Capabilities : input output channels, human memory, thinking, reasoning, emotion 1.2. The Computer 1.3. The Interaction : models of interaction, ergonomics 1.4. Paradigms: paradigms for interaction
<ul style="list-style-type: none">• Understand the key elements in the interaction design process• Understand the user-centered design within a software engineering framework.	Unit II: The Design Process 2.1. Interaction Design Basics 2.2. HCI in the Software Process 2.3. Design Rules 2.4. Universal Design

<ul style="list-style-type: none"> Overview of implementation support for the programmer of an interactive system. 	Unit III: Implementation Support 3.1. Elements of windowing systems 3.2. Implementation Tools 3.3. User Interface Management System
<ul style="list-style-type: none"> Understand the techniques used to evaluate the interactive system to see if it satisfies user needs. To design a system to be universally accessible, regardless of age, gender, cultural background or ability Understand the provision of user support in the form of help systems and documentation 	Unit IV: Evaluation Techniques and User Support 4.1. Introduction and Goals of Evaluation 4.2. Expert Analysis and User Participation 4.3. Evaluation Method 4.4. Universal Design Principles 4.5. Requirements of User Support 4.6. Approaches to User Support. 4.7. Designing User Support System
<ul style="list-style-type: none"> Understands the models with psychological or cognitive origins, where the emphasis is on formulating aspects of user behavior such as goal formation and problem solving Understand socio-technical models 	Unit V: User Models 5.1. Cognitive Models 5.2. Socio-organizational issues 5.3. Stake holder requirements
<ul style="list-style-type: none"> Understand revisit group interaction, this time focusing on groupware technology itself Understand the design and use of hypertext and multimedia systems as interactive system 	Unit VI: Groupware, Ubiquitous Computing, Virtual and Augmented Reality, Hypertext and Multimedia 6.1 Groupware and Computer-supported Collaborative Work 6.2 Ubiquitous Computing 6.3 Virtual Reality and Augmented Reality 6.4 Hypertext, Multimedia and the World Wide Web

Evaluation System

Undergraduate Programs							
External Evaluation	Marks	Internal Evaluation	Weight age	Marks	Practical	Weight age	Mark
End semester examination	60	Assignments	20%	20	Practical Report copy	25%	20
(Details are given in the separate table at the end)		Quizzes	10%		Viva	25%	
		Attendance	20%		Practical	50%	

					Exam		
		Internal Exams	50%				
Total External	60	Total Internal	100%	20		100%	20
Full Marks 60+20+20 = 100							

External evaluation

1. End semester examination:

It is a written examination at the end of the semester. The questions will be asked covering all the units of the course. The question model, full marks, time and others will be as per the following grid.

2. External Practical Evaluation:

After completing the end semester theoretical examination, practical examination will be held. External examiner will conduct the practical examination according to the above mentioned evaluation. There will be an internal examiner to assist the external examiner. Three hours time will be given for the practical examination. In this examination Students must demonstrate the knowledge of the subject matter.

Full Marks: 100, Pass Marks: 45, Time: 3 Hrs

Nature of question	Total questions to be asked	Total questions to be answered	Total marks	Weightage
Group A: multiple choice*	20	20	20×1 = 20	60%
Group B: Short answer type questions	7	6	6×8 = 48	60%
Group C: Long answer type questions	3	2	2×16 =32	60%
			100	100%

Each student must secure at least 50% marks in internal evaluation in order to appear in the end semester examination. Failed student will not be eligible to appear in the end semester examinations.

Internal evaluation

Assignment: Each student must submit the assignment individually. The stipulated time for submission of the assignment will be seriously taken.

Quizzes: Unannounced and announced quizzes/tests will be taken by the respective subject teachers. Such quizzes/tests will be conducted twice per semester. The students will be evaluated accordingly.

Attendance in class: Students should regularly attend and participate in class discussion. Eighty percent class attendance is mandatory for the students to enable them to appear in the end semester examination.

Below 80% attendance in the class will signify NOT QUALIFIED (NQ) to attend the end semester examination.

Presentation: Students will be divided into groups and each group will be provided with a topic for presentation. It will be evaluated individually as well as group-wise. Individual students have to make presentations on the given topics.

Mid-term examination: It is a written examination and the questions will be asked covering all the topics in the session of the course.

Discussion and participation: Students will be evaluated on the basis of their active participation in the classroom discussions.

Instructional Techniques: All topics are discussed with emphasis on real-world application. List of instructional techniques is as follows:

- Lecture and Discussion
- Group work and Individual work
- Assignments
- Presentation by Students
- Quizzes
- Guest Lecture

Students are advised to attend all the classes and complete all the assignments within the specified time period. If a student does not attend the class(es), it is his/her sole responsibility to cover the topic(s) taught during that period. If a student fails to attend a formal exam/quiz/test, there won't be any provision for re-exam. Unless and until the student clears one semester he/she will not be allowed to study in the following semesters.

Laboratory Work

Student should have practical session for realization of design, implementation, and evaluation of interactive systems. Students should also implement the cognitive models and social-organizational issues for human computer interaction. The tools and frameworks for the simulation of human computer interaction can be decided by the instructor. The lab work should be practiced for minimum of 3 lab hours per week.

Prescribed Text

- Dix, A., Finlay, J., Abowd, G.D., & Beale, R. (2004). *Human computer interaction* (3rd ed.). Prentice Hall

References

- Preece, J., Rogers, Y., & Sharp, H. (2015). *Interaction design: Beyond human-computer interaction* (4th ed.) John Wiley & Sons Ltd
- Moggridge, B. (2007) *Designing Interactions*. Cambridge, MA: The M.I.T. Press

- Lazar, J., Feng, J.H., Hochheiser, H. (2010). Research Methods in Human-Computer Interaction, Wiley