

**Department Of Computer Science and Engineering**  
**Kathmandu University**  
**Dhulikhel, Kavre**



**Subject: Human Computer Interaction**  
**Level: B.E/B.Sc 3<sup>rd</sup> Year/2<sup>nd</sup> Semester**

**Course: COMP 341**  
**Credit Hours: 3**

**Objectives:**

**Human Computer Interaction (HCI)** is concerned with designing, evaluating and deploying usable, effective and enjoyable technologies in a range of contexts - be it home, work, school, cyberspace or other domain. The aim of this course is to give an introduction to the key areas, approaches and developments in the field of user interface design. So the main objective of this course is to get you to think constructively and analytically about how to design and evaluate interactive technologies.

**Chapter 1: Introduction**

- Introduction to the course
- Why HCI?
- Usability Goals
- Design Principles
- Usability Requirements
- Usability Measures
- Usability Motivations
- Universal Usability
- Physical Variation
- Cognitive and Perceptual Variations
- Personality
- Cultural and International Diversity
- Users with Disabilities
- Elderly
- Children
- Accommodating Hardware and Software Diversity
- HCI Goals

## **Chapter 2: Good & Bad Design**

- Visibility
- Affordance
- Constraints
- Mapping
- Consistency
- Feedback

## **Chapter 3: Capabilities of Human Beings**

- Four stage model of information processing
- Sensory Memory and Perception
- Gestalt psychology
- Memory
- Mental Models
- Metaphors
- Design Guidelines for the Web

## **Chapter 4: Guidelines, Principles and Theories**

- Guidelines
- Principles
- Theories

## **Chapter 5: Managing Design Process**

- Organizational Design to Support Usability
- Four Pillars of Design
- Development Methodology
- Ethnographic Observation
- Participatory Design
- Scenario Development
- Social Impact Statements
- Legal Issues

## **Chapter 6: Evaluating Interface Designs**

- Experts Reviews
- Usability Testing and Laboratories
- Survey Instruments
- Acceptance Test
- Evaluation During Active Use
- Controlled Psychologically Oriented Experiments

## **Chapter 7: Direct Manipulation and Virtual Environments**

- Introduction
- Examples of Direct Manipulation
- Discussion of Direct Manipulation
- 3D Interfaces
- Teleoperation
- Virtual and Augmented Reality

## **Chapter 8: Command and Natural Languages**

- Introduction
- Command-Organization Functionality, Strategies, and Structure
- Naming Abbreviations
- Natural Language in Computing

## **Chapter 9: Menu Selection, Form Filling and Dialog Boxes**

- Benefit of Menu
- Task-Related Organization
- Menu Types
- Data Entry with Menus
- Audio Menus and Menus for Small Displays

## **Chapter 10: Interaction Devices**

- Interaction Devices
- Keyboard Layouts
- Pointing Devices
- Fitts's Law

Novel Devices  
Speech and Auditory Interfaces  
Displays

## **Chapter 11: User Documentation and Online Help**

Introduction  
Paper vs Online Manuals  
Reading from Paper vs Displays  
Online Tutorial  
Online Help  
Online Manuals  
Online Demonstrations and Guides  
Online Communities for User Assistance  
Development Process

### **Text book:**

Designing the User Interface, Ben Schneiderman, McGraw Hill Edition, 3rd edition.

### **Reference:**

Human-Computer Interaction, Alan Dix, Janet Finlay, Gregory D. Abowd, Russell Beale, 5<sup>th</sup> edition.

### **Lecture type:**

Lectures will be delivered through slides presentation. All the lectures will be highly interactive with active participation of students and demonstration of real life examples.

**Note:** Reading materials will be provided throughout the semester for further readings. It includes research papers, case studies, reports and articles.