ITEC 101: HUMAN-COMPUTER INTERACTION

Week 3 - Human-Computer Interaction & User-Centered Design

1.1 What is HCI?

Human-Computer Interaction (HCI) is an interdisciplinary field that focuses on the design, evaluation, and implementation of interactive computing systems for human use. It aims to create interfaces that enhance user experience, usability, and accessibility.

1.2 Importance of HCI

HCI plays a vital role in modern technology by:

- Enhancing user experience (UX)
- Increasing efficiency and productivity
- Improving accessibility and inclusivity
- Reducing the learning curve for new users
- Ensuring safety and reliability in critical systems
- Driving innovation in interaction paradigms

1.3 Principles of HCI

To create effective and user-friendly interfaces, HCI follows key principles:

- **Usability** – Ensuring ease of learning, efficiency, and user satisfaction
- **Consistency** – Maintaining uniformity in design elements
- **Feedback** – Providing immediate responses to user actions
- **Affordance & Signifiers** – Making functions intuitive and obvious
- **Flexibility & Customization** – Allowing users to tailor interactions
- **Error Prevention & Recovery** – Minimizing errors and providing correction mechanisms
- **Accessibility** – Designing for users with different abilities
- **User-Centered Design (UCD)** – Prioritizing user needs in the development process

2. Introduction to User-Centered Design (UCD)

2.1 What is UCD?

User-Centered Design (UCD) is a design philosophy that focuses on understanding user needs, behaviors, and preferences. It ensures usability through iterative testing and real-world feedback, resulting in accessible, efficient, and satisfying products.

2.2 UCD Principles

- Early and active involvement of users during the design process
- Design decisions based on user needs and wants
- Identification of user and task requirements
- Continuous user feedback throughout the development cycle
- Iterative design improvements based on testing and feedback

3. Methods of User Research

To implement UCD effectively, designers use various research methods:

- **Surveys** – Collect large-scale user feedback
- **Interviews** – Gain in-depth insights into user challenges
- **Observations** – Study real-world interactions with systems
- **User Testing** – Evaluate usability through hands-on interaction
- **Focus Groups** – Gather qualitative data from group discussions

4. Creating User Personas

User personas represent different types of users based on research data. They include:

- **Demographics** (age, gender, occupation)
- **Goals and motivations**
- **Pain points and challenges**
- **Behavioral patterns and technology usage** User personas help designers make informed, user-focused decisions.

5. Creating Journey Maps

Journey maps illustrate a user's interaction with a system over time. This helps identify pain points and areas for improvement.

Steps in Creating a Journey Map:

1. Identify the user and their goal
2. Map key interactions and emotional responses
3. Highlight frustrations and pain points
4. Identify opportunities to enhance the user experience

6. Conclusion

Human-Computer Interaction (HCI) and User-Centered Design (UCD) are essential for designing intuitive, efficient, and accessible systems. Research methods like surveys, observations, and user testing help

designers create better user experiences. Implementing UCD principles ensures that technology aligns with human needs and expectations.

By focusing on HCI and UCD, we can develop digital systems that enhance usability, accessibility, and overall user satisfaction.