Title: Introduction to Human-Computer Interaction

Catalog Description

This course provides an introduction to the field of human-computer interaction (HCI). HCI is an interdisciplinary field that integrates cognitive psychology, design, computer science and others. Examining the human factors associated with information systems provide the students knowledge to understand the factors that influence usability and acceptance of IS. This course will examine human performance, components of technology, methods and techniques used in design and evaluation of IS. Societal impacts of HCI such as accessibility will also be discussed. User-centered design methods will be introduced and evaluated. This course will also introduce students to the contemporary technologies, used in the empirical evaluation methods.

Learning Objectives

Students will be able to:

- Design, implement and evaluate effective computer interfaces.
- Understand the concepts of user differences, user experience and collaboration as well as how to design contextually.
- Understand the basic cognitive psychology issues involved in HCI.
- Understand the different devices used for input and output and the issues / opportunities associated with these devices.
- Interact with the software design process in order to create computer interfaces.
- Understand the role of theory and frameworks in HCI.
- Understand a number of design techniques and apply them appropriate to various design situations.
- Apply contemporary techniques used in evaluating computer interfaces.
- Understand how the focus of the HCI field is expanding from system usability and user interfaces to broader user experience and its strategic role for organizations.

Topics

- Relevance of HCI
- Principles in HCI design
    - Ergonomic engineering
    - Cognitive engineering
    - Affective engineering
- User-Centered Design
    - Users
        - Capabilities
            - Conceptual models
            - Metaphors
            - Mental models
        - Individual differences
        - Learning
        - Errors
        - Training

- Special HCI Issues Related to
  - Users
    - Children
    - Elderly
    - Accessibility
    - Gender
  - Organizations
  - Society
  - Task Analysis
- Devices
  - PCs
  - Industrial devices
  - Consumer devices
  - Mobile devices
- Development
  - Introduction to projects
  - Prototyping
  - Contextual inquiry
  - Usability engineering
- Evaluation Methods
  - Heuristics
  - Cognitive evaluation
  - Usability testing
  - Questionnaires
  - Research design

Discussion

- This course is not about developing basic interactive technologies (such as input/output devices); it briefly introduces these technologies, and then focuses on developing human-centered organizational information systems that support users' organizational tasks. Human physical, cognitive, and affective characteristics are discussed, as are organizational tasks and context. Such discussions are oriented toward achieving a good fit between human, technology, and tasks within the organizational and business context.
- This course in HCI will take the student through the HCI life-cycle (analysis, design, testing and implementation) in order to be competent in all aspects of HCI practice. This includes understanding the theory perspective of HCI research, the current methods in design and testing and the final implementation of the project. For this reason fundamental SA&D skills will have to be injected into the course or prerequisites will have to be met.
- A project based approach is highly recommended for this course. This includes implementing several hands-on skills either in a laboratory or through self-paced learning at home. This will help students develop the full range of skills that is needed for HCI work.
- It is important that students understand that various concepts and techniques outlined in this class draw upon a multitude of disciplines (e.g., cognitive psychology, consumer behavior, etc.). By gaining a solid understanding of various core theories that inform HCI

design, the student can then translate this knowledge into building working prototypes in a broad range of contexts.

