

IT3405: User Interface Design (UID) (Compulsory)

INTRODUCTION:

A key component to the discipline of Information Technology is the understanding and the advocacy of the user in the development of IT applications and systems. IT graduates must develop a mind-set that recognizes the importance of users and organizational contexts. They must employ user-centered methodologies in the development, evaluation, and deployment of IT applications and systems.

In the course, the student is supposed to understand the role of user in the development of Information Technology (IT) applications/systems with respect to user interface (UI) which facilitates the interaction. The student is supposed to recognize the importance of users and organizational contexts. They must employ user-centered methodologies in the development, evaluation, and deployment of IT applications and systems. Hence, this course covers areas such as human factors, ergonomics, user-centered design, task analysis, usability and accessibility, user task analysis, required for an Information Technology degree programme.

CREDITS: 03

LEARNING OUTCOMES:

After following this course, the student will be able to identify the importance of developing effective user interface according to usability requirements and principles. At the same time, he/she will be able to understand the human cognitive situation and how such users could be accommodated with the evolution in technology. It is expected the student will be able to develop prototype interface together help/user documentation and to carry out an evaluation.

This course will cover the minimum requirements of knowledge and skill required to software developer who may want to develop effective user interfaces.

MINOR MODIFICATIONS

When minor modifications are made to this syllabus, those will be reflected in the Virtual Learning Environment (VLE) and the latest version can be downloaded from the relevant course page of VLE. Please inform your suggestions and comments through the VLE. <http://vle.bit.lk>

ONLINE LEARNING MATERIALS AND ACTIVITIES

You can access all learning materials and this syllabus in the VLE: <http://vle.bit.lk>, if you are a registered student of BIT degree program. It is very important to participate in learning activities given in the VLE to learn this subject.

ONLINE ASSIGNMENTS

The assignments consist of two quizzes, assignment quiz 1 (It covers the first half of the syllabus)

and assignment quiz 2 (It covers the second half of the syllabus). Maximum mark for a question is 10, minimum mark for a question is 0 (irrespective of negative scores). Final assignment mark is calculated considering 40% of assignment quiz 1 and 60% of assignment quiz 2. Pass mark for the online assignments in a course is 50. You are advised to do online assignments before the final exam of the course. It is compulsory to pass all online assignments to partially qualify to obtain year 2 certificate.

FINAL EXAMINATION

Final exam of the course will be held at the end of the semester. Each course in the semester 3 is evaluated using a two hour question paper which consists of 20-25 MCQs and 3-4 structured questions based on a given case study.

OUTLINE OF THE SYLLABUS

| Topic | Minimum number of hours |
|---|-------------------------|
| 1. Introduction to Human-Computer Interaction | 04 |
| 2. Understanding the Human user | 06 |
| 3. Evolving technologies for rich interaction | 06 |
| 4. Interaction Modeling and Design | 06 |
| 5. PACT Analysis | 02 |
| 6. User Centered Design | 06 |
| 7. Usability and Accessibility | 06 |
| 8. Task Analysis | 03 |
| 9. Developing effective prototype interfaces | 04 |
| 10. User Support | 02 |
| Total hours | 45 |

REQUIRED MATERIALS

Ref 1: Human-Computer Interaction, Alan Dix - Janet Finlay - Gregory Abowd- Russell Beale, 3rd Edition, PRENTICE HALL (www.hcibook.com/e3)

Ref 2: Designing Interactive Systems, David Benyon, 2nd Edition or 3rd Edition, Pearson, (<http://www.pearsoned.co.uk/HigherEducation/Titlesby/Benyonetal/>)

DETAIL SYLLABUS**1. Introduction to Human-Computer Interaction (4 Hours)**

- 1.1. Importance of Human-Computer Interaction
- 1.2. Components of HCI Model
- 1.3. What is Interface?
- 1.4. Risk of Poor User Interface
- 1.5. Developing Interaction
- 1.6. HCI as a discipline and its short history

2. Understanding the Human User (6 hours)

- 2.1. Different Channels and how human process data
 - i. Visual
 - ii. Auditory
 - iii. Haptic
 - iv. Movement
- 2.2. Human Memory Management
 - i. Sensory Memory
 - ii. Short Term Memory
 - iii. Long Term Memory
- 2.3. Human Thinking and Problem solving
- 2.4. Human errors when using computers
- 2.5. Types of Users

3. Evolving Technologies for Rich Interaction (6 hours)

- 3.1. What is rich interaction
- 3.2. Text based input and out devices and systems
- 3.3. Pointing and touch sensitive devices
- 3.4. Voice based input and out devices and systems
- 3.5. Multimodal and natural interaction
- 3.6. Gesture based interaction
- 3.7. Effect of computing power for HCI

4. Interaction Modeling and Design (6 hours)

- 4.1. Interaction Model
- 4.2. Two gulfs in the interaction
- 4.3. Human Errors

- 4.4. Ergonomics
- 4.5. Interaction Styles
- 4.6. WIMP Components for Interaction

5. PACT Analysis (2 hours)

- 5.1. PACT Framework for design feasibility
- 5.2. PACT component
 - i. People
 - ii. Activities
 - iii. Context
 - iv. Technologies

6. User Centered Design (6 hours)

- 6.1. Importance of User Centred Design (UCD) and Usability
- 6.2. Golden rules of Design for HCI
- 6.3. Process of UCD
- 6.4. Mental Model and User Behaviour
- 6.5. Persona and Scenario

7. Usability and Accessibility (6 hours)

- 7.1. Defining usability and its importance
- 7.2. 5Es in Usability and Benefits
- 7.3. Human Interaction and Usability
- 7.4. Accessibility and standards
- 7.5. Acceptability
- 7.6. General guidelines and principles

8. Task Analysis(3 hours)

- 8.1. Importance of task analysis
- 8.2. Goals, Tasks and Actions
- 8.3. Different Methods
- 8.4. Designing the menu structure

9. Developing Effective Prototype Interfaces (4 hours)

- 9.1 Overview of prototyping
- 9.2 Types of prototyping
- 9.3 Tools for prototyping
- 9.4 Paper prototyping
- 9.5 Developing a working prototype

10. User Support (4 hours)

- 10.1 Types of user supports
- 10.2 Features of user supports
- 10.3 Interactive user supports
- 10.4 Writing help manual