ASIAN INSTITUTE OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**AT71.9004 Human Computer Interaction, 3(45-0) Semester: January**

**Course Objective**:

This course provides an introduction to and overview of the field of human-computer interaction (HCI). HCI is an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and many other areas. Topics covered include HCI design, human factors, experimental design, analysis of variance, interaction elements, modeling, and HCI research trends. The central focus of the course is a semester-long team project, in which students will design, implement and evaluate a user interface. Teams will be incrementally led through the phases of ideation, prototyping and implementation, and evaluation.

**Learning Outcomes** :

The students on the completion of this course would be able to:

* Able to understand subtle interaction elements and their effect on performance
* Given a design problem, be able to understand the issues to consider in solving it
* Able to apply human factors knowledge to design
* Able to apply empirical research including experimental design and data analysis
* Able to perform fundamental modeling techniques in HCI

**Prerequisite**: None

**Course Outline:**

I. History of HCI

1. Vannevar Bush’s “as we may think”

2. Invention of the mouse

3. Xerox star

4. Macintosh

5. SIGCHI conference

III. Design of Everyday Things

1. Why Design is Difficult
2. Design Principles
3. Design Theories

IV. Human Factors

1. Perception
2. Attention
3. Memory
4. Reasoning

VI. Experimental Design

1. Independent Variable vs. Dependent Variable
2. Within-subject vs. Between-subject
3. Control vs. Confounding vs. Random
4. Task & Procedure, Order Effects, Validity Analysis

VII. Analysis of Variance

1. Parametric Tests
2. Non-parametric tests

VII. Interaction Elements

1. Control-display gain
2. Latency
3. Modes
4. Bandwidth

X. Modeling

1. Fitts’ law
2. Hick-Hyman Law
3. Keystroke-level model

## **Laboratory Session(s)**: None

**Learning Resources:** Textbook.

**Reference Textbook(s):**

**Human Computer Interaction: An Empirical Research Perspective** by I. Scott Mackenzie, 1st ed. (2013)

**The Design of Everyday Things** by Norman, Revised and Expanded ed. (2013)

**Don't Make Me Think by Krug**, 2nd ed. (2006)

**Teaching and Learning Methods**:

The format of lectures are mixed between face-to-face lectures (60%) and in-class activities (40%).

In particular, after each new topic, problems are presented and students will be challenged to solve problems using the learned method.

**Time Distribution and Study Load**:

Lectures: 45 hours

Self-study: 9 hours/week

**Evaluation Scheme**:

* Assignments: 10%
* Midterm: 20%
* Final: 30%
* Research and Idea Phase: 10%
* Prototype Phase: 15%
* Evaluation and Communication Phase: 15%

**Instructor(s):** Chaklam Silpasuwanchai