University of Colombo School of Computing

Internal Undergraduate Degrees

Course Detail Document

Course Outline									
Course Code :	**IS3002/SCS3109**								
Course Name :	**Human-Computer Interaction**								
(Bold and underline the appropriate)	**Year :**	1	2	**3**	4		**Semester :**	**1**	2
Number of Credits	**3**								
Core/Optional	Core for IS and SEng, Optional for CS								
Evaluation Criteria	**Formative assessment :**	40 (Learning activities during the semester)							
	Summative assessment :	60 (Final semester exam is a 2 hr paper, which consists of MCQs and Structured Questions)							
	The course is a blended learning course where there will be at least two hour face-to-face interaction in the classroom during every week of the semester. Online learning activities through the virtual learning environment (ugvle.ucsc.cmb.ac.lk) of the undergraduate programme are carried out during the course. Hence, the active participation of students is expected and it will be a condition in the evaluation criteria.								
Requisites for following the Course	N/A								

Method of Delivery		**Per Week**	**Total**
	Lectures	2 Hours	30 Hours
	Group Work	1 Hour	10-15 Hours

Course Definition	
Introduction	In this course, you will learn the principles and methods which can be used to develop effective user interfaces. The course will provide a balance of both practical and theoretical knowledge. Practical concerns will be balanced by discussion of relevant theory from the literature. You will solve problems in take-home and in-class assessments where you will participate in group projects to design, implement, and evaluate user interfaces. Through this course, you will obtain necessary practical skills for designing user interfaces, an understanding of the human side of computing, the background to apply theoretical and empirical techniques in HCI, and a good overview of the field.

Course Aim/Intended Learning Outcomes	Upon completion of this course, students will be able to do the following: **LO1.** Identify the importance of human-computer interaction for the success of a software product **LO2.** Identify different computing technology which can be used to develop rich interaction. **LO3.** Describe how the gulfs of interaction affect the human error in HCI **LO4.** Apply PACT analysis and task analysis to a given scenario. **LO5.** Design User Interfaces (UIs) for a given real-world context by applying the principles of interaction design, usability heuristics, and universal design. **LO6.** Create rapid prototypes to solve a given problem by applying the concepts of UCD, Participatory design, and Co-Design. **LO7.** Apply the usability engineering principles and guidelines for an interface evaluation.
Assessment Plan	• **Assessment 1 (10%)** – In-class Individual - Students will be asked to describe the appropriate gulf of interaction based on a given scenario. **(LO3)** • **Assessment 2 (10%)** – In-class Individual - Students will be asked to apply PACT analysis and Task analysis to a given Scenario. **(LO4)** • **Assessment 3 (30%)** – In-class Group – Students will be asked to complete a 1-hour fast-paced Participatory design/Co-design activity. They will be marked based on their activities and the presentation at the end. **(LO6)** • **Assessment 4 (50%) –** Take-home Group – Students will be asked to create five (5) high-level UI prototypes (Interfaces) for given real-world scenarios based on best practices and principles in HCI. They will be marked based on a rubric. Evaluation will be done by peers and teachers based on usability engineering principles and guidelines. **(LO1, LO2, LO5, LO7)**
References/Reading Materials	• Shneiderman, B. (2010). *Designing the user interface: strategies for effective human-computer interaction*. Pearson Education India. • Rogers, Y., Sharp, H., & Preece, J. (2011). *Interaction design: beyond human-computer interaction*. John Wiley & Sons. • Schuler, D., & Namioka, A. (Eds.). (1993). *Participatory design: Principles and practices*. CRC Press. • Simonsen, J., & Robertson, T. (Eds.). (2012). *Routledge international handbook of participatory design*. Routledge. • Norman, D. (2013). *The design of everyday things: Revised and expanded edition*. Basic Books (AZ). • Dix, A., Finlay, J., Abowd, G.D., & Beale, R. (2004). *Human-computer interaction (3rd ed.).* Prentice Hall. ISBN 0-13-046109-1.

Course Content

Topic 1: Introduction to Human-Computer Interactions

- Importance of Human-Computer Interaction
- Components of HCI Model
- What is an Interface?
- Risk of Poor User Interface
- Developing Interaction
- HCI as a discipline and its short history

Duration: 2 hrs

Topic 2: Computing Technologies for Rich Interaction

- Interactivity
- Richer interaction
- Multimodal and natural interaction
- Gesture-based interaction
- Effect of computing power for HCI

Duration: 2 hrs

Topic 3: Frameworks and Models in HCI

- Interaction Models
- Human Error
- Two gulfs in the interaction
- Ergonomics
- Interaction styles

Duration: 2 hrs

Topic 4: Interaction Design

- Golden rules of design
- Navigation design
- Screen design and layout
- User action and control

Duration: 4 hrs

Topic 5: People, Activities, Context, and Technology (PACT) Analysis and Task Analysis

- PACT Framework for design feasibility
- PACT Components
- Task Analysis

Duration: 4 hrs

Topic 6: User-Centered Design, Codesign, and Participatory Design

- History
- User-Centered Design (UCD)
- Process of UCD
- Mental Model and User Behavior
- Persona and Scenario
- Co-design
- Participatory Design

Duration: 6 hrs

Topic 7: Accessibility, Usability and Universal Design

- Defining usability and its importance
- 5Es in Usability and Benefits
- Human Interaction and Usability
- Usability Heuristics
- Accessibility and standards
- Acceptability
- General guidelines and principles
- Universal Design

Duration: 2 hrs

Topic 8: Prototyping

- Overview of prototyping
- Types of prototyping
- Tools for prototyping
- Developing a working prototype

Duration: 4 hrs

Topic 9: Implementation, Evaluation, and Design-after-design

- Implementation
- Evaluation
- Goals of Evaluation
- Evaluation Techniques
- Choosing an Evaluation Method
- Design-after-design

Duration: 4 hrs

Course Administration Details			
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