Subject Description Form

Subject Code	COMP3423
Subject Title	Human Computer Interaction
Credit Value	3
Level	3
Pre-requisite / Co-requisite / Exclusion	**Pre-requisite**: COMP1011/COMP1012/ENG2002 **Exclusion:** COMP2222
Objectives	The objectives of this subject are to: 1. provide students with a broad view of both theoretical and practical issues in human factors for design of human-computer interfaces; 2. equip students with knowledge and understanding of the nature of human computer interactions, human characteristics, computer system and interface architecture; 3. equip students with sound skills in design and evaluation of user interfaces; 4. equip students with computing techniques and paradigms in interface and interaction development; and 5. provide students with a broad view of the state of interactive software development in today's industry.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: *Professional/academic knowledge and skills* (a) identify the human factors and the theoretical issues involved in human-computer interaction design; (b) apply the theoretical design principles to the design and evaluation of user interfaces; (c) collect user requirements, design an innovative human-computer interface according to these requirements, and evaluate the design; (d) design and develop computer systems for different kinds of human interaction; *Attributes for all-roundedness* (e) solve problems by using systematic approaches; (f) solve problems in groups; and (g) write technical reports and present the findings.

Subject Synopsis/ Indicative Syllabus	**Topic**
	1. Introduction to Human Computer Interaction (HCI) Definitions and importance of HCI; historical context of HCI; roles various disciplines play within HCI.
	2. Human Information Processing Perception and representation; models and limits of human memory; mental models; use of metaphors; user aspects of language, social and organisational aspects; input and output devices: response time, performance characteristics (human and system).
	3. Visual Perception, Computer Graphics and Multimodal Interface Characteristics of human visual system; multimedia and multimodal interface; psychological aspects of multimodal interface; advancements in computer graphics and their impact on multimodal interfaces.
	4. Language, Communication and Dialogue Dialogue interaction: types and techniques; non-graphical dialogues; prototyping and user-centered design; structural HCI design; design rationale; speech dialogue and basic natural language processing.
	5. Ergonomics and I/O Devices Definitions and importance of ergonomics; physical ergonomics and cognitive ergonomics; input devices; output devices; advancements in I/O devices.
	6. Evaluation and Testing Importance of evaluation; standards and performance metrics; evaluation techniques; variable types; experiments design; basic statistics related to evaluation.
Teaching/ Learning Methodology	Lectures, Tutorials and Labs The subject material will be delivered through lectures, tutorials and labs. Lectures will provide the main body of the subject materials. Where possible, guest lectures and/or case studies will be used to give the subject material more relevancy to real-world scenarios. Tutorials and labs will provide students with more in-depth opportunities to explore the lecture materials and practice the lecture concepts. Where possible, a hands-on, interactive approach will be used. Projects and Assignments Projects and assignments will provide students with in-depth opportunities to practice the lecture concepts, as well as to assess their ability to apply these concepts in practical scenarios. Examinations Examinations will assess students on their grasp of subject material.

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						
			a	b	c	d	e	f	g
	Continuous Assessment	**60%**							
	1. Assignments and Project		✓	✓	✓	✓	✓	✓	✓
	Final Examination	**40%**	✓	✓		✓	✓		
	Total	100%							

The course will be accessed by assignments, projects, and tests.

Assignments are designed to reinforce the concepts and methods learned in the class. Projects are used to develop students' analytic and problem-solving skills. The written part of the assignments and projects helps student develop their organisation and documentation skills. The oral part of the coursework allows students to present their ideas and communicate effectively to the audience. Examinations are used to assess independent problem solving and critical thinking skills.

Student Study Effort Expected	Class contact:	
	▪ Lecture, Tutorials, Workshops and Labs	39 Hrs.
	Other student study effort:	
	▪ Assignments, Coursework, Reading, Exam	66 Hrs.
	Total student study effort	105 Hrs.

Reading List and References

Textbook:

1. Shneiderman, B., Plaisant, C., Cohen, M., Jacobs, S., Elmqvist, N., and Diakopoulos, N. Designing the User Interface: Strategies for Effective Human-Computer Interaction, 6th Edition, Pearson, 2016.

Reference Books:

1. Dix, J. Finlay, Abowd, G., and Beale, R., *Human-Computer Interaction*, 3rd Edition, Prentice Hall, 2004.

Reading List:

1. Azmandian, M., Hancock, M., Benko, H., Ofek, E., & Wilson, A. D. (2016). Haptic retargeting: Dynamic repurposing of passive haptics for enhanced virtual reality experiences. In Proceedings of the 2016 chi conference on human factors in computing systems (pp. 1968-1979).

2. Hoorn, J. F. (2014). Stakeholder logistics of an interactive system. Journal of Systems and Software, 95, 52-69. doi:10.1016/j.jss.2013.11.1095

| | 3. Slater, M. (2009). Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments. Philosophical Transactions of the Royal Society B: Biological Sciences, 364(1535), 3549-3557. |