# Subject Description Form

| Subject Code | COMP 5517 |
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| **Subject Title** | Human Computer Interaction |
| **Credit Value** | 3 |
| **Level** | 5 |
| **Pre-requisite / Co-requisite/ Exclusion** | Basic knowledge of programming is required. |
| **Objectives** | • To provide students with a broad view of both theoretical and practical issues in human factors for design of human-computer interfaces.<br><br>• To equip students with knowledge and understanding of the nature of human computer interactions, human characteristics, computer system and interface architecture.<br><br>• To equip students with sound skills in design, development and evaluation of user interfaces. |
| **Intended Learning Outcomes** | Upon completion of the subject, students will be able to:<br><br>a. grasp and consolidate the main concepts (conceptual model, metaphors and paradigms) that influence human-computer interaction;<br><br>b. have a deep understanding of how human cognition and information processing impact human computer interaction;<br><br>c. critically review and compare different evaluation and testing methods, both quantitative and qualitative;<br><br>d. apply HCI theory, principles and practices to user interface design to develop creative solutions; and<br><br>e. systematically analyze an interactive system using appropriate evaluation and usability testing methods. |
| **Subject Synopsis/ Indicative Syllabus** | **Nature of Human-Computer Interaction (HCI)**<br>Definitions and importance of HCI; history and intellectual roots of HCI; roles various disciplines play within HCI.<br><br>**Evaluation**<br>Role of evaluation; qualitative and heuristic evaluation techniques; empirical evaluation and benchmarking.<br><br>**Human Characteristics**<br>Perception and representation; models and limits of human memory; mental models; use of metaphors; social and organizational aspects; input and output devices: performance characteristics (human and system).<br><br>**Formal and Conceptual Models**<br>Task analysis and predictive modeling; dialogue interaction: types and techniques; models for describing interaction processes. |

| | **Design Guidelines and Metrics** |
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| | User-centered design; structural HCI design and envisioning design; standards and metrics; guidelines to support design; standards and metrics; documentation and on-line information. |
| | **Development and Applications** |
| | Design rationale; participatory design and prototyping; user interface management systems; WWW application design; groupware; collaborative work and virtual environments. |
| | **Selected Topics in Advanced HCI** |
| | Potential topics include: human-robot interaction; ubiquitous computing; speech and natural language interfaces; tangible user interfaces. |
| **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 and Tests** |
| | Examinations and tests will assess students on their grasp of subject material. |

**Assessment Methods in Alignment with Intended Learning Outcomes**

Students' performance in this subject will be assessed by using a letter-grading system in accordance with the University's convention from grade F (failure) to A+. The relative weights of the different assessment components are as follows:

| Specific assessment methods/tasks | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
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| | | a | b | c | d | e |
| 1. Projects, Assignments and Tests | 55 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2. Examination | 45 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Total | 100 % | | | | | |

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| | Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:<br><br>The assignments, tests and examinations will assess students' ability to understand and describe the concepts behind human-computer interaction, as well as various techniques and methods that are used to develop and assess user interfaces.<br><br>Projects will require students to demonstrate their ability to apply the subject concepts in designing, implementing and analyzing user interfaces. | |
| **Student Study Effort Expected** | Class contact: | |
| | ▪ Lectures, tutorials, workshops and labs | 39 Hrs. |
| | Other student study effort: | |
| | ▪ Assignments, Coursework, Reading, Exams | 66 Hrs. |
| | Total student study effort | **105 Hrs.** |
| **Reading List and References** | • A. Dix, J. E. Finlay, G. D. Abowd, and R. Beale, *Human-Computer Interaction*, 3rd Edition, Harlow: Pearson/Prentice Hall, 2004.<br>• D. Norman, *The Design of Everyday Things*, Revised and Expanded Edition, New York: Basic Books, 2013.<br>• B. Shneiderman, C. Plaisant, M. Cohen, S. Jacobs, N. Elmqvist, and N. Diakopoulos, *Designing the User Interface: Strategies for Effective Human-Computer Interaction*, 6th Edition, Boston: Pearson, 2017.<br>• W. J. Smith, *ISO and ANSI Ergonomic Standards for Computer Products: A Guide to Implementation and Compliance*, Upper Saddle River, N.J.: Prentice Hall, 1996.<br>• ACM Transactions on Graphics<br>• IEEE Transactions on Visualization and Computer Graphics<br>• ACM Transactions on Computer-Human Interaction<br>• ACM Conference on Human Factors in Computing Systems<br>• ACM Symposium on User Interface Software and Technology<br>• ACM Symposium on Interactive 3D Graphics<br>• ACM Symposium on Virtual Reality Software and Technology<br>• IEEE International Symposium on Mixed and Augmented Reality<br>• ACM SIGGRAPH<br>• ACM SIGGRAPH VRCAI<br>• IEEE Virtual Reality<br>• IEEE VIS<br>• IEEE Transactions on Human-Machine Systems<br>• International Journal of Human Computer Studies<br>• International Journal of Human-Computer Interaction<br>• International Journal of Child-Computer Interaction<br>• Human Computer Interaction<br>• Interacting with Computers<br>• Computer Graphics Forum<br>• Computers & Graphics<br>• Graphical Models<br>• Computer Animation and Virtual Worlds |