

3. Dublin Institute of Technology

Pre-Requisite Modules code(s)	Co-Requisite Modules code(s)	ECTS Credits	Module Code	Module Title
		5	CMPU2008	Human Computer Interaction (HCI)

8.2.8. Human Computer Interaction (HCI)

Module author: Andrea Curley and Dave Carroll

Module Description:

Human Computer Interaction (HCI) emphasises the significance of good interfaces and the relationship of interface design to successful human interaction with computer systems. This module provides the theoretical knowledge and practical experiences in the fundamental aspects of analysing, designing, prototyping, and evaluating user interfaces based on sound HCI principles.

Module aim

The aim of this module is to:

- Enable students to understand human behaviour with interactive objects;
- Provide students with the skills to develop, and evaluate interactive software using a human-centred approach;
- Provide students with an appreciation of human diversity and the need for accessibility and its implications for HCI design.

Learning Outcomes:

On completion of this module, the learner will be able to:

- Discuss the background of HCI with its underpinnings from psychology and cognitive science;
- Select appropriate I/O devices and interaction styles to support users and their tasks;
- Employ a range of user centred design techniques which use established design principles and methodologies to solve HCI problems;
- Employ a range of low-fidelity and high-fidelity prototyping techniques;
- Employ a range of evaluation techniques;
- Discuss accessibility issues and their implications for user interface design.

Learning and Teaching Methods:

This module will be delivered using a combination of lectures and practical laboratory sessions. The main theoretical material will be delivered in lectures. The practical work will analyse design, prototype and evaluate a user interface will be carried out in the laboratory sessions.

Module Assessment

60% - written examination; 40% - continuous assessment

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Module content

- *Fundamentals of Human Computer Interaction* Scope and interdisciplinary nature of HCI; human capabilities; user groups.
- *Cognitive Foundations* Metaphors; mental models; perception; attention; memory; learning.
- *User interface technology* Input and output devices, interaction styles.
- *User-centred design process* HCI design process vs. software engineering design process; usability guidelines, principles and theories
- *User interface design and prototyping* User centered design; participatory design; screen design; low-fidelity, medium-fidelity and high-fidelity prototyping design principles and rules.
- *User interface evaluation* Usability specifications. Measurement criteria. Usability evaluation; cognitive walkthroughs, heuristic analysis, expert review, think aloud methods.
- *Usability issues and accessibility* Ease of use. Principles of universal design. Usability standards. HCI standards. Accessibility requirements. Implications for HCI. Legal imperative for accessibility.
- *Major Application Areas* Safe vs. hostile user environments: end-user interfaces, computer supported co-operative work, e-commerce, mobile computing, ubiquitous computing.

Essential Reading:

- Preece, J. et al (2002), *Interaction Design*, John Wiley & Sons.
- Norman, D. (2002,) *The Design of Everyday Things*, Basic Books.

Supplemental Reading:

- Benyon, D. (2010), *Designing Interactive Systems*, Pearson.
- Shneiderman, B. & Plaisant, C. (2010), *Designing the User Interface*, Pearson.
- Dix, A., Finlay, J., Abowd, G., & Beale, R. (2003), *Human Computer Interaction*, 3rd Ed, Prentice Hall.

Web references, journals and other:

- Jakob Nielsen's Website <http://www.useit.com/>
- Donald Norman's Website <http://www.jnd.org/>
- Ben Shneiderman's Website <http://www.cs.umd.edu/~ben/>
- ACM SIGCHI <http://www.sigchi.org/>
- BCS HCI <http://www.bcs.org/server.php?show=nav.14296>

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Further Details:

Four contact hours per week, two hours of lectures and two hours of labs. To be delivered in one semester.

Date of Academic Council approval