UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Cognitive Ergonomics

2627-2-F5109P013

Learning area

APPLIED EXPERIMENTAL PSYCHOLOGICAL SCIENCES

Learning objectives

By the end of the course, students should:

Knowledge and understanding

- be aware of the implications of psychological research for improving the design and evaluation of computer systems
- be able to explain the importance of user-centred design
- consider how technologies should be designed to support communication and collaboration, and how their design can affect these processes

Applying knowledge and understanding

- consider how technologies can affect user experience and how they can encourage changes in behaviour
- be able to apply major theories in cognitive psychology to practical case studies
- communicate ideas and research findings by written means
- group work.

Making judgment
Students will learn to integrate methodological and theoretical skills in the field of cognitive ergonomics and to apply them to propose new projects, aimed either at developing new ideas or at comparing different systems in terms of usability and User Experience. With the help of class discussions and group work students will also be able to develop cretive thinking, in order to design and possibly implement innovative and original digital solutions to

promote changes in behaviour.

Communication skills
Through both group presentations and class discussion students will will acquire communication skills to effectively interact with different professionals, in order to teamwork with them to develop new digital tools and systems. Students will also be encouraged to present their work to possibles clients/financiers and donors (and to write a report of their project), in order to learn how to build a "pitch-talk". In this way students will be aware of the difference in communication styles according to different audience and purposes.

Learning skills
The course will promote the acquisition of the ability to apply major theories in cognitive psychology to practical case studies, by stimulating creative thinking and encouraging the application of classical methods in psychological reasearch to frame user needs and to deeply understand the practical meaning of the words "designing for people".

Contents

Purpose of the course is to provide basic knowledge about cognitive ergonomics and Human Computer Interaction and to provide insights about those peculiar aspects that link design to ergonomics. Special attention will be given to the “communicative” aspects of user-centered design, both in reference to usability and aesthetic pleasantness, and to the methods developed to evaluate the User Experience.

Detailed program

- Cognitive ergonomics and cognitive psychology: foundations of cognitive processes; Perception, psychophysical methods, memory and attention, embodied cognition.
- Usability, accessibility and acceptability. Designing usable products: affordance, mapping and feedback.
- Interface Analysis: graphic symbols, cognitive tools. Design for the interaction: developing Personas and Scenarios; requirement analysis: interviews and questionnaires; probes and card sorting techniques; case studies. Participative Design.
- How we think: thinking errors and how to prevent them.
- User experience. The model of Hassenzhal: self products and act products.
- Evaluating a product: euristic evaluation; discount euristic evaluation and cognitive walkthrough; cooperative evaluation; codiscovery; evaluation without being there; controlled experiments.
- Evaluation in practice: usability metrics and mesures; reporting usability evaluation results.
- Gaming and gamification
- Measuring User Experience

Prerequisites

Basic knowledge of cognitive psychology and methods of research in psychology. Students lacking such basic knowledge are encouraged to ask for a list of basic references.

Teaching methods

The course will be held in presence. Teaching will consist of lecture-based lessons, and also interactive classwork, discussion on scientific papers, group works and assignments. All lessons will contain at least a part of interaction with students, who are encouraged to develop an original project on the usability or user-experience of a device or a system or, alternatively, to design a new product or interactive system. Workshops with private companies are also planned.

Assessment methods

Oral exam on textbooks and on handouts of the lectures. For students attending lessons, an alternative to the oral exam is the presentation, in both written and oral form, of the working project developed during lessons. The exam will verify the level of mastery of the course contents with special attention with the link between theory and practice in developing user centered designed systems.

Textbooks and Reading Materials

Benyon, D. (2014). Designing Interactive Systems. A Comprehensive guide to HCI, UX and interaction design (Chapters 1-13). Pearson.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | GENDER EQUALITY | INDUSTRY, INNOVATION AND INFRASTRUCTURE | REDUCED INEQUALITIES | SUSTAINABLE CITIES AND COMMUNITIES