UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Cognitive Ergonomics

2122-1-F9201P007

Learning area

Learning objectives

By the end of the course, students should:

1) be aware of the implications of psychological research for improving the design and evaluation of computer systems

2) be able to explain the importance of user-centred design

3) consider how technologies should be designed to support communication and collaboration, and how their design can affect these processes

4) consider how technologies can affect user experience and how they can encourage changes in behaviour

5) be able to apply major theories in cognitive psychology to practical case studies

6) communicate ideas and research findings by written means

7) group work

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, methods in psychology, methods in cognitive ergonomics, psychophysical methods, perception, memory and attention.

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: heuristic evaluation; discount heuristic evaluation and cognitive walkthrough; cooperative evaluation; co-discovery; evaluation without being there; controlled experiments.

Evaluation in practice: usability metrics and measures; reporting usability evaluation results.

Gamification

Measuring UX

Prerequisites

Knowledge of written English is required for the analyses of scientific papers proposed during the lessons; basic knowledge of cognitive psychology and methods of research in psychology.

Teaching methods

Frontal lectures with challenges and excercises. Students 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. All course material (e.g., slides, readings) are made available on the e-learning website of the course.

Lessons will be held in presence, unless further COVID-19 related restrictions are imposed.

Assessment methods

Oral exam on textbooks and on handouts of the lectures; alternatively, presentation and discussion of the project in both written and oral form. Learning objectives will be evaluated, with a particular focus on objectives 5, 6 and 7: be able to apply major theories in cognitive psychology to practical case studies; communicate ideas and research findings by written means; group work

Textbooks and Reading Materials

Norman D. (2013). The design of Everyday Things, Revised and Expanded Edition. New York: Basic Books.

Norman D. (2004). Emotional design. Why we love (or hate) everyday things. New York: Basic Books.

Reason J. (1990). Human Error. Cambridge: Cambridge University Press.