UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Laboratorio di Interaction Design

2627-2-F9202P025

Aims

The Interaction Design Lab course aims to train students to design the interaction with digital systems, services, interactive artefacts and technology-mediated experiences, in order to make the user experience effective, meaningful and engaging, beyond the traditional dimensions of usability. The course provides the conceptual foundations, tools and methodologies needed to address user-centred design, from the collection and interpretation of data to identify needs and contexts of use, to the analysis of design alternatives, through to prototyping and evaluation of the proposed solution.

The course takes up the foundations of user-centred design and develops them within the broader perspective of Interaction Design. Particular attention is devoted to the paradigms of contemporary interaction, to the design of complex, multi-device systems, to the temporal dimension of the interactive experience, to the behaviours induced by digital systems, with an introduction to emerging forms of Human-AI Interaction and Human-Robot Interaction, to End-User Development, immersive environments, and the ethical, cultural and social implications of design.

The teaching path integrates lectures, practical sessions and the progressive development of a group project, supported by in-class discussion, review and feedback. The project is the core of the course: it is at once the main learning vehicle and the object of the final assessment.

Expected learning outcomes

Knowledge and understanding. By the end of the course students know the fundamental principles of Interaction Design and the paradigms of contemporary interaction, from direct to conversational, spatial, distributed, ambient and robotic interaction; they understand the concepts of usability and User Experience, the temporal dimension of the interactive experience, the mechanisms of behavioural and persuasive interaction, the specific features of Human-AI Interaction, Human-Robot Interaction and immersive environments, the principles of End-User Development, as well as critical and speculative design approaches. This knowledge is acquired through lectures and the learning materials provided.

Applying knowledge and understanding. Students are able to collect and interpret data on user needs and contexts

of use, generate and compare design alternatives, structure the flows, states and transitions of an interactive system, develop prototypes at different levels of fidelity and evaluate their effectiveness against defined experience goals. These abilities are exercised in the practical sessions on real cases and in the progressive development of the group project.

Making judgements. Students are able to critically assess complex, multi-device interaction solutions, recognise their ethical, cultural and social implications, and justify their design choices in terms of accessibility, transparency, user control and accountability. This ability is developed through in-class review and discussion, the practical sessions on research ethics and alternative design approaches, and the critical discussion of the project at the exam.

Communication skills. Students are able to present and argue the design choices of their work, both in writing through the project report and orally through the presentation and discussion at the exam, using the language and representation tools proper to Interaction Design. In-class presentation and discussion sessions during the course prepare students for this.

Learning skills. Through exposure to research methodologies, practical cases, prototyping and evaluation tools and the recommended readings, students acquire the conceptual and operational means to independently keep up to date in a rapidly evolving field, in particular with emerging paradigms such as Human-AI Interaction, Human-Robot Interaction, End-User Development and immersive environments.

Contents

The course presents the principles of interaction design and explores the techniques and methodologies needed to develop the various phases of a design cycle. Topics include:

- Concepts of Interaction Design, Usability and User Experience
- Paradigms of contemporary interaction and new forms of technological mediation, from conversational to ambient and robotic interaction
- Interaction Design as systemic design of flows, states, transitions and integrated environments
- The temporal dimension of experience: micro-interactions, feedback, onboarding, rhythm and engagement
- Behavioural and persuasive interaction, decision architectures and ethical responsibility
- Interaction Design for immersive environments, Human-AI Interaction and Human-Robot Interaction
- End-User Development: personalisation, configuration and appropriation of interactive systems by end users
- Critical design, speculative design and the social and cultural impact of interactive systems
- Research, prototyping and evaluation methodologies, accessibility and design ethics

Detailed program

Lectures

- Introduction to Interaction Design and to the course's key concepts
- Paradigms of contemporary interaction: direct, conversational, spatial, distributed, ambient and robotic interaction
- Interaction Design as the design of systems, interaction structures and complexity management
- The temporal dimension of experience: micro-interactions, onboarding, feedback, flow and progression
- Behavioural and persuasive interaction: engagement, continued use, behaviour steering and ethical responsibility

- Interaction Design for immersive environments, virtual and augmented reality
- Interacting with agents and autonomous systems: elements of Human-AI Interaction and Human-Robot Interaction, physical and social presence, proxemics, initiative and predictability of system behaviour
- End-User Development: the end user as designer, trigger-action approaches, composition of rules and behaviours, personalisation and adaptation of systems over time

Practical sessions

- Methods and tools for Interaction Design
- Consent, research ethics and impact assessment beyond usability
- From idea to design options: generating alternatives, prototyping and critically applying methods and tools to practical cases
- Alternative approaches to Interaction Design: ethical design, accessibility, critical design, speculative design, co-design and participatory design
- Design as subtraction, underdesign and undesign
- Nudging, cognitive forcing and cognitive friction
- Activities dedicated to Human-AI Interaction and Human-Robot Interaction: collaboration between users and intelligent or robotic systems, transparency, explainability, trust, accountability and human control
- Activities dedicated to End-User Development: designing mechanisms that let end users configure, compose and adapt system behaviour, with attention to the entry threshold and to the balance between simplicity and expressive power

Prerequisites

None.

Teaching form

The course comprises a total of **52 hours** of teaching activity, all delivered **in person**. No hours are delivered remotely, either synchronously or asynchronously.

Lectures, 28 hours in total:

- 4 lectures of 2 hours delivered in person in delivery-based mode, devoted to the theoretical framing of Interaction Design paradigms;
- 4 lectures of 2 hours and 4 lectures of 3 hours, 20 hours in total, delivered in person and structured in an initial delivery-based part presenting the concepts, followed by an interactive part devoted to applied exercise, review of work in progress and discussion with students.

Practical sessions, 24 hours in total:

- 6 sessions of 2 hours and 4 sessions of 3 hours, 24 hours in total, delivered in person in interactive mode, individually and in groups, involving the critical application of methods and tools to practical cases, the generation of design alternatives, prototyping and direct feedback from the instructor.

The course is taught in Italian.

Textbook and teaching resource

Materials (slides, articles, videos, etc.) will be provided by the instructors and uploaded to eLearning during the course.

Recommended supporting readings:

- Norman D. (2013), *The Design of Everyday Things*. Basic Books
- Cooper A., Reimann R., Cronin D. (2007), *About Face 3: The Essentials of Interaction Design*. John Wiley & Sons, New York, NY, USA
- Norman D. (2004), *Emotional Design. Why We Love (or Hate) Everyday Things*. Basic Books
- Sharp H., Rogers Y., Preece J. (2023), *Interaction Design: Beyond Human-Computer Interaction* (6th edition). John Wiley & Sons

Non-attending students prepare using the slides and other materials uploaded to eLearning together with the readings listed above. No alternative assessment arrangements apply to them: the project remains the object of the assessment and must be developed and presented in the same way as for attending students.

Semester

Second semester

Assessment method

No mid-term tests are scheduled. The exam consists of a single project work: there is no oral examination on the theoretical content of the course, and no written test.

The project work has two inseparable components: a group design report, submitted before the exam session, and its individual presentation and discussion at the exam. The questions asked during the discussion concern the project: its rationale, the path leading to the choices made, the alternatives discarded, and the concepts and methods from the course applied within it. It is therefore not a theory exam, but a check that the principles and techniques covered in the course have been understood and can be argued at the point where the student has actually put them into practice. Any reference to material covered in lectures or practical sessions always arises in relation to the project under discussion.

The group report is a partial component. The final component of the exam is the presentation and discussion of the project, which takes place individually with each student and makes it possible to assess their own contribution and preparation beyond the collective result.

Assessment criteria

The Examination Board assesses the project work against seven criteria, for a maximum of 32 points.

On the group work, up to 20 points in total, with a single score shared by the whole group:

- *Documentation*, up to 4 points: completeness, clarity and coherence of the report in accounting for the design process, the choices made and their rationale.
- *Quality of implementation and organisation of materials*, up to 4 points: care, readability and structure of the prototypes and other artefacts produced, and the overall order of the submitted materials.

- *Research autonomy and creativity*, up to 4 points: ability to independently find and use sources, references and tools, and originality of the proposal with respect to existing solutions.
- *Demo and experimental analysis*, up to 4 points: functioning and effectiveness of the prototype demonstration, design and conduct of the evaluation activities, and interpretation of the results.
- *Depth of approach and design richness*, up to 4 points: how thoroughly the problem is investigated, complexity of the designed interaction and articulation of the alternatives considered.

On individual performance, up to 12 points in total:

- *Presentation*, up to 4 points: clarity of exposition, command of disciplinary language, effectiveness and time management in presenting the project.
- *Command of the topics covered*, up to 8 points: assessed through the questions asked during the discussion, this concerns awareness of the design choices made and the ability to connect them to the concepts and methods of the course, critically discussing limits, alternatives and implications.

Grading

The final grade is the sum of the scores across the seven criteria, up to a maximum of 32 points. The exam is passed with an overall score of at least 18 points, including a minimum of 4 points for command of the topics covered: a sufficient mark in this criterion, assessed individually during the discussion, is a necessary condition for passing, regardless of the group score. Scores from 18 to 30 correspond to the grade out of thirty; an overall score of 31 or above is awarded with honours (lode).

If command of the topics covered is judged insufficient, students are not required to develop a new project: they may apply the changes indicated by the Examination Board to the existing project and take a subsequent exam session.

Office hours

Office hours are by appointment, arranged by email at luigi.gargioni@unimib.it, and held in person or online.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | REDUCED INEQUALITIES | SUSTAINABLE CITIES AND COMMUNITIES