Syllabus

Course description

Course title	Human Computer Interaction
Course code	76095
Course title additional	
Scientific sector	INF/01
Teaching language(s)	English
Degree course	Master in Software Engineering
Other degree courses (loaned)	
Lecturer(s)	Prof. Antonella De Angeli, Antonella.DeAngeli@unibz.it https://www.unibz.it/it/faculties/engineering/academic-staff/person/30670-antonella-de-angeli
Teaching assistant(s)	
Semester	1
Course year	1
CP	6
Teaching hours	40
Lab hours	20
Individual study	90
Planned office hours	18
Contents summary	PACT framework: People Activities Context Technology Design principles Quality metrics: usability, user experience, engagement Cognitive processes: attention, perception and memory Evaluation and empirical research Graphical User Interface Design

Course content	The Human-Computer Interaction course explores the principles, methods, and tools essential for designing effective and user-friendly interactive systems. Students will learn foundational methods and frameworks, including User-Centred Design and PACT analysis (People, Activities, Contexts, Technologies), to understand the interaction between users and systems. Emphasis is placed on establishing quality metrics and applying design principles to create efficient graphical user interfaces (GUIs) using standard WIMP elements (Windows, Icons, Menus, Pointers), common design patterns, and attention to visual aesthetics and multimedia interaction. The course also covers the human-information processor model, covering essential cognitive aspects such as visual attention, perception, and memory, which directly influence interface usability. Finally, students will engage in evaluation techniques, learning how to identify user requirements, conduct formative and summative evaluations, and apply heuristic evaluations to iteratively improve design quality and user satisfaction.
Keywords	User-Centred Design; GUI Design; Visual Perception; Heuristic Evaluation; PACT Analysis
Prerequisites	
Propaedeutic courses	
Teaching format	Service Learning with a mix of frontal lectures, hands-on activities, invited presentations, students' active engagement.
Mandatory attendance	Attendance (over 75%) is compulsory for students wanting to engage in the course work-based assessment. Non-attending students instead have to contact the lecturer at the start of the course (or at least one month before the exam they want to take) to agree on the modalities of the independent study and application.

Specific educational objectives and learning outcomes	Knowledge and understanding D1.1 possess solid knowledge of both the fundamentals and the application aspects of the various fundamental areas of computer science. Making judgements D3.1 ability to independently select documentation from various sources, including technical books, digital libraries, technical scientific journals, web portals, or open source software and hardware tools. Communication skills D4.1 ability to present the contents of a scientific/technical report in a set time in front of diverse audiences, including non-specialists. D4.2 ability to structure and draft scientific and technical descriptive documentation of project activities for diverse audiences. D4.3 ability to work and co-ordinate the work of a multi-disciplinary project team, to identify activities aimed at achieving the project objectives. D4.5 ability to interact and collaborate in the realisation of a project or research with peers and experts. Learning skills D5.1 ability to independently extend the knowledge acquired during the course of study by reading and understanding scientific and technical documentation in English.
Specific educational objective and learning outcomes (additional information)	The course belongs to the type "caratterizzanti – discipline informatiche. The course is designed to give students **first-hand experience of the design process of graphical interfaces.** It follows the basic steps of requirements elicitation, design and evaluation. During the semester, students will be provided with a general overview of research in User-Centered Design of graphical interfaces. In parallel, they will work on an interaction design project, from ideation to mid fidelity prototype of a Graphical User Interface for a computing system. After successful attendance and engagement with the key study, the students are expected to acquire substantial professional skills and knowledge to move from conceptual design to a medium fidelity prototype. Non attending students will cover the same scientific content and will be given a set of structured exercises to support the individual elaboration of professional skills.

Assessment	Student performance in the Human-Computer Interaction course will be evaluated through a medium-fidelity prototype and project report and an oral examination. The prototype and project report will assess the ability to work collaboratively in a multidisciplinary team and coordinate tasks effectively (D4.3, D4.5), as well as creativity, critical thinking, and the capacity to summarize content clearly and originally (D4.2). Methodological rigor will also be evaluated, reflecting students' solid understanding of core and applied areas of computer science (D1.1). The oral examination will focus on clarity of responses, mastery of technical language, and the ability to summarize, evaluate, and connect different topics, demonstrating the ability to present complex information within a limited time to diverse audiences (D4.1). The written report will further assess methodological rigor and creativity, as well as the ability to summarize and critically evaluate topics while using precise, appropriate language (D4.2). Additionally, students will be evaluated on their ability to select and integrate documentation from a range of sources to support their work (D3.1) and to independently expand their knowledge through scientific and technical texts in English (D5.1).
Evaluation criteria	The course is heavily project based and attendance is strongly recommended. Assessment for Attending students: **Group project work** Written project report elaborated in groups (Max 10 page) to be delivered two weeks before the group sits the oral examination (50%). Individual oral examination with presentation of the final prototype to evaluate the results of the project, test knowledge acquisition, and verify individual contribution to the group work (50%). Assessment for Non attending students **Individual examination** Course-work: Written project report elaborated in groups (Max 10 page) to be delivered two weeks before the group sits the oral examination (50%). Individual oral examination with presentation of the final prototype to evaluate the results of the project, test knowledge acquisition, and verify individual contribution to the group work (50%).

Required readings	Jennifer Preece, Yvonne Rogers, Helen Sharp (2023). Interaction Design: Beyond human-computer interaction. New York: John Wiley & Sons, Inc. . 6th Edition.
Supplementary readings	
Further information	Selected papers will be suggested after each lecture.
Sustainable Development Goals (SDGs)	Quality education, Gender equality, Reduced inequalities, Sustainable cities and communities.