ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103001036 - Hci: Introduction And Design Methods

DEGREE PROGRAMME

10AZ - Master Universitario En Innovación Digital

ACADEMIC YEAR & SEMESTER

2025/26 - Semester 1

Index

Learning guide

1. Description

1.1. Subject details

Name of the subject	103001036 - Hci: Introduction And Design Methods
No of credits	6 ECTS
Type	Optional/elective
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AZ - Master Universitario en Innovación Digital
Centre	10 - E.T.S. De Ingenieros Informáticos
Academic year	2025-26

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Cristian Moral Martos (Subject coordinator)	5110 / 3345	cristian.moral@upm.es	W - 10:00 - 14:00 Th - 12:00 - 14:00 It is required to ask for an appointment by email. The updated tutoring schedule can be found at http://dlsiis.fi.upm.es/tutorias-2526.

Elena Villalba Mora	5110	elena.villalba@upm.es	M - 10:00 - 12:00 W - 10:00 - 12:00 F - 10:00 - 12:00 It is required to ask for an appointment by email. The updated tutoring schedule can be found at http://dlsiis.fi.upm.es/tutorias-2526.

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Skills and learning outcomes *

3.1. Skills to be learned

CE-DIPO01 - Capacidad para conceptualizar, diseñar y desarrollar la interacción persona-ordenador de productos y servicios innovadores

CE-DIPO03 - Habilidad para hacer conexiones entre los deseos y necesidades del consumidor o cliente y lo que la tecnología puede ofrecer

CE-DIPO04 - Capacidad para analizar las necesidades de información que se plantean en un entorno y llevar a cabo en todas sus etapas el proceso de diseño centrado en el usuario

CG03 - La capacidad de usar la lengua inglesa de manera competente, es decir, con capacitación para tareas complejas de trabajo y estudio.

3.2. Learning outcomes

RA6 - Communicate and describe the results of the stages of the user-centred design process

RA8 - Run different qualitative techniques to study the context of use (user, tasks, and environment) of an interactive system

RA7 - Understand how to design an interactive system using a user-centred approach

RA9 - Analyse qualitative data to specify the design requirements related to the context of use

RA38 - Understand how to process information and what are the limitations and diversity of human beings in their interaction with computer systems

RA13 - Understand methods to communicate the design intent

RA10 - Understand the main heuristics that have to be considered to design a usable interactive system

RA37 - Understand the term usability and its attributes

RA39 - Understand the user-centred approach

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

This course begins with an introduction to the field of Human-Computer Interaction (HCI) and usability, followed by an overview of methods for eliciting user requirements. It then emphasizes the importance of understanding user needs and cognitive processes in the design of usable systems.

In addition to theoretical foundations, the course offers practical experience with established HCI design methods. Interaction design is approached from a user-centred perspective, with a focus on specific techniques for exploring and refining the behaviour of products and services.

4.2. Syllabus

1. Introduction and conceptualization
    1.1. Introduction of Human Computer Interaction
    1.2. Understanding basic concepts of HCI
2. Usability
3. Human factors. Information Processing.
4. Interaction styles and devices
5. User Centred Design Process
6. Regulatory and Ethical aspects
7. User research - Context of use
    7.1. Analysis of the context of use
        7.1.1. Data collection techniques
        7.1.2. Question formulation
        7.1.3. Interviewing users
        7.1.4. Contextual inquiry
    7.2. Qualitative analysis
        7.2.1. Coding qualitative data
        7.2.2. Validating results from qualitative analysis
    7.3. Specification of the context of use
8. Interaction design
    8.1. Design heuristics
    8.2. Navigation flows. Scheme layouts. Sketching.
9. Low-fidelity prototyping
    9.1. Paper-based low-fidelity prototype
    9.2. Software-based low-fidelity prototype
10. Adoption and acceptance models

5. Schedule

5.1. Subject schedule*

Week	Type 1 activities	Type 2 activities	Distant / On-line	Assessment activities
1	**1.1. Introduction to HCI** Duration: 01:00 Lecture **1.2. Understanding basic concepts of HCI** Duration: 01:00 Lecture **2. Usability** Duration: 02:00 Lecture			
2	**2. PRESENTATION: Assessment of usability attributes** Duration: 02:00 Additional activities **3. Human factors** Duration: 02:00 Lecture			**PRESENTATION: Assessment of usability attributes [non-recoverable]** Group presentation Progressive assessment Presential Duration: 02:00
3	**4. Interaction styles and devices** Duration: 01:00 Lecture **5. User-Centred Design Process** Duration: 01:00 Lecture **6.1. Analysis the context of use. 6.1.1. Data collection techniques** Duration: 02:00 Lecture			
4	**6.1.2. Question formulation** Duration: 02:00 Problem-solving class **6.1.3. Interviewing users** Duration: 02:00 Problem-solving class			
5	**6.1.4. Contextual inquiry** Duration: 02:00 Problem-solving class **6.2.1. Coding qualitative data** Duration: 02:00 Lecture			

6	**6.2.1. Coding qualitative data** Duration: 02:00 Problem-solving class **6.2.2. Validation of qualitative analysis** Duration: 02:00 Lecture			
7	**6.2.2. Validation of qualitative analysis** Duration: 02:00 Problem-solving class **Follow-up of the project: Qualitative analysis** Duration: 02:00 Laboratory assignments			
8	**6.3. Specification of the context of use** Duration: 02:00 Lecture **6.3. Specification of the context of use** Duration: 02:00 Problem-solving class			**PROJECT: Qualitative analysis of a context of use [non-recoverable]** Group work Progressive assessment Not Presential Duration: 00:00
9	**Follow-up of the project: Specification of the context of use** Duration: 02:00 Laboratory assignments **7.1. Design heuristics** Duration: 02:00 Lecture			
10	**7.1. Design heuristics** Duration: 02:00 Problem-solving class **7.1. PRESENTATION: Assessment of heuristics** Duration: 02:00 Additional activities			**PRESENTATION: Assessment of heuristics [non-recoverable]** Group presentation Progressive assessment Presential Duration: 02:00
11	**7.2. Navigation flows. Scheme layouts. Sketching.** Duration: 02:00 Lecture **7.2. Navigation flows. Scheme layouts. Sketching.** Duration: 02:00 Problem-solving class			
12	**7.2. Navigation flows. Scheme layouts. Sketching.** Duration: 02:00 Problem-solving class **8. Low-fidelity prototyping** Duration: 00:30 Lecture **8.1. Paper-based low-fidelity prototyping** Duration: 01:30 Problem-solving class			**PROJECT: Designing the user interaction [non-recoverable]** Group work Progressive assessment Not Presential Duration: 00:00

13	**8.1. Paper-based low-fidelity prototyping** Duration: 02:00 Problem-solving class **8.2. Software-based low-fidelity prototyping** Duration: 02:00 Problem-solving class			
14	**8.2. Software-based low-fidelity prototyping** Duration: 02:00 Problem-solving class **9. Adoption and acceptance** Duration: 02:00 Lecture			**PROJECT: Low-fidelity prototypes [non-recoverable]** Group work Progressive assessment Not Presential Duration: 00:00
15				
16				
17	**Final Exam** Duration: 03:00 Additional activities			**Final Exam** Written test Progressive assessment and Global Examination Presential Duration: 03:00

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
2	PRESENTATION: Assessment of usability attributes [non-recoverable]	Group presentation	Face-to-face	02:00	7.5%	/ 10	CG03 CE-DIPO03
8	PROJECT: Qualitative analysis of a context of use [non-recoverable]	Group work	No Presential	00:00	30%	5 / 10	CG03 CE-DIPO04
10	PRESENTATION: Assessment of heuristics [non-recoverable]	Group presentation	Face-to-face	02:00	7.5%	/ 10	CG03 CE-DIPO03
12	PROJECT: Designing the user interaction [non-recoverable]	Group work	No Presential	00:00	10%	5 / 10	CG03 CE-DIPO01
14	PROJECT: Low-fidelity prototypes [non-recoverable]	Group work	No Presential	00:00	15%	5 / 10	CG03 CE-DIPO01
17	Final Exam	Written test	Face-to-face	03:00	30%	5 / 10	CG03 CE-DIPO01 CE-DIPO03 CE-DIPO04

6.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final Exam	Written test	Face-to-face	03:00	30%	5 / 10	CG03 CE-DIPO01 CE-DIPO03 CE-DIPO04

6.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills

Final written exam	Written test	Face-to-face	03:00	100%	5 / 10	CG03 CE-DIPO01 CE-DIPO03 CE-DIPO04

6.2. Assessment criteria

Grading criteria

The projects will be evaluated during their iterative development during the course. Grading of students will be based on:

1) Quality of the oral communication skills.

2) Ability to debate

3) Ability to understand concepts.

Progressive evaluation system

A **progressive evaluation** is carried out through a project (broken down into a set of activities) and two presentations. Both are carried out in a team, and weigh, respectively, 55% and 15% of the final grade. Completion of the project is mandatory during the teaching period, so none of its submissions can be recovered either in the global evaluation or in the extraordinary one, since all the assignments have a dependency on the previous one and therefore cannot be redone individually. Due to this dependency, the submissions of the project have a minimal grade of 5.

Oral presentations are performed in the classroom, and then cannot be redone.

The remaining 30% of the final grade will be assessed trough a final written exam in which it will be evaluated that the student has adequately assimilated the concepts explained in the subject, as well as their critical spirit and capacity for analysis focused on said concepts. The exam will take place on the day of the official exam of the subject, so it will not be possible to recover it in the global evaluation (since they coincide in time). As this exam is the only individual assessment, it is also required to obtain a minimal grade of 5 to pass the subject.

Global evaluation process

The **global evaluation** of the subject consists of carrying out a final written exam (30% of the final grade) in which it will be evaluated that the student has adequately assimilated the concepts dealt with in the subject, as well as their critical spirit and capacity for analysis focused on said concepts. This examination coincides with the one carried out by means of progressive evaluation. The rest of the evaluation activities are not recoverable, and therefore must be carried out during the teaching period. As this exam is the only individual assessment, it is also required to obtain a minimal grade of 5 to pass the subject.

Extraordinary evaluation

The **extraordinary evaluation** of the subject consists of carrying out a final written exam in which it will be evaluated that the student has adequately assimilated the concepts and abilities explained in the subject, as well as their critical spirit and capacity for analysis focused on said concepts. This exam weighs 100% of the final grade.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Moodle of the course	Web resource	https://moodle.upm.es/titulaciones/oficiales
Interaction Design: Beyond Human-Computer Interaction.	Bibliography	Helen Sharp, Yvonne Rogers, Jenny Preece. 5th Edition. John Wiley & Sons, 2019. Available in paper format in the Library, and in electronic format (3rd edition) through https://ingenio.upm.es

Software for Use: A Practical Guide to the Models and Methods of Usage-Centered Design	Bibliography	Larry L. Constantine, Lucy A.D. Lockwood. Addison-Wesley, 1999. Available in paper format in the Library, and in electronic format through https://ingenio.upm.es
Usability Engineering	Bibliography	Jacob Nielsen. AP Professional, 1993. Available in electronic format through https://ingenio.upm.es
The coding manual for qualitative researchers	Bibliography	Johnny Saldaña. 2nd Edition. SAGE, 2013. Available in paper format in the Library.

8. Other information

8.1. Other information about the subject

Sustainable Development Goals (SDG)

The objective of this course is to learn methods and technique to design interactive systems that have an adequate degree of usability and accessibility. Taking this into account, and the UN recommendations on SDGs, this subject deals with competencies related to the following SDGs:

- **SDG4 Quality education** - Ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all. To facilitate this objective, interactive systems designed for teaching, which are increasingly important in society, must meet usability and accessibility requirements discussed in the subject.
- **SDG8 Decent work and economic growth** - Promote inclusive and sustainable economic growth, employment and decent work for all. Today many jobs depend on the use of interactive systems. These systems must meet usability and accessibility requirements to promote equal opportunities at work.
- **SDG10 Reduced inequalities** - To favor the inclusion of all people in society, interactive systems that are designed for all types of activities, including citizen participation, culture and leisure, must meet the usability and accessibility requirements covered in the subject.

Innovative teaching methodologies

The following innovative teaching methodology is implemented in the course to motivate and reinforce student learning:

- Design Thinking: the project follows a User Centred Design, Inclusive Design and Design thinking approach.
- Learn by doing: students are challenged to practice techniques learnt during the classes. For example, in some classes, we apply role playing to practice how to conduct user interviews and observation before going into the field to practice.

Notes

- NOTE 1: What is included in this guide will be applied if and only if the course has the necessary human and material resources to be able to apply what is set forth here. In case of not having the necessary means, both the teaching and the way of evaluating the students will be adapted to the available means.
- NOTE 2: Please bear in mind tutoring hours may change along the course. Please, ask for an appointment in advance.
- NOTE 3: Please note that concrete dates for the assignments will be informed at the beginning of the course and are subject to changes during the course due to justified reasons which, if any, will be communicated with sufficient notice.