UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

# Course guide
# 340268 - ENUA-D7P32 - Usability and Accessibility Engineering

**Last modified:** 17/07/2023

**Unit in charge:** Vilanova i la Geltrú School of Engineering
**Teaching unit:** 732 - OE - Department of Management.
717 - DEGD - Department of Engineering Graphics and Design.

**Degree:** BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2009). (Optional subject).

**Academic year:** 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

## LECTURER

**Coordinating lecturer:** Diaz Boladeras, Marta

**Others:** Labrador Jansà, Àngel

## REQUIREMENTS

Previosuly passed MEDI Metodologia del disseny

And we recommend to do this course along with INPS and DIDU to complete the especialisation on Inclusive Design and User Centered Design.

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

**Specific:**
D39. D39. Ability to analyze repercussions generated by products in society.
D47. D47. Ability to design interfaces.

**Transversal:**
1. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
3. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.
5. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
7. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
4. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

## TEACHING METHODOLOGY

Presentation-synthesis

In the sessions the teacher makes a summary of the topic. This presentation is intended as a guide work study students, with the function of introducing the item, propose material for study, clarify doubts and synthesis.

Each topic will be provided with:
- Power Point presentations used in class and other supplementary material will be available on the Digital Campus.
- Bibliography indicating specific location, preferring to material in electronic format.

Working activities and exercises

- Problems and Exercises for fixing the concepts introduced in the presentation.

- Approach of situations that allow the group builds a shared experience that will serve to advance in the understanding of content (eg, group dynamics, effective communication experiences.) They are based on experience different situations in which the experience serves as a study material.

Casework and articles

The work on cases or article will be based on questions raised by the professor. These works must to be delivered on date at the beginning of the session where will be discussed in class. The deadline to submit is specified in calendar. The teacher may show in the Digital Campus some of the best works delivered to be used as a reference.

The casework seeks to promote the following capabilities:

- Understanding of the situation presented and the ability to synthesize the most relevant issues
- Apply the concepts to practical cases.
- Capturing the complexity of real life situations, different points of view and various dimensions of the organizational and management issues
- Ability to exchange views and discuss, and ability to learn from the debate

Project

The project will be carried out in groups that will be constituted at the beginning of the course. In this project there are problems to solve, in which it will be necessary to apply the knowledge that is acquired. This project acts as a vertegrador axis of the learning, following the principles of the learning based on projects.
A dossier will be provided where the objectives, description, date of delivery, and evaluation criteria will be included.

The project will consist of a memory and an oral presentation

Oral defense of the project.
Each student will perform at least one oral presentation. The exhibition days will be announced at the beginning of the course.

Tutoring in small and individualized group

The teacher will follow individually and in small groups the progress of the student and supervise their practices, providing feedback on their progress, the degree of achievement of the objectives of their work and giving directions for improvement.

## LEARNING OBJECTIVES OF THE SUBJECT

TARGETS

1. Understand the different phases and the need for a quality assurance system for the interaction throughout the product development cycle.

2. Know the specific techniques of optimization of Usability and know how to plan and apply the main ones: design guides, inspection techniques and heuristic evaluation and tests with users (definition of metrics, observation situations, sessions development and Analysis)

3. Know how to obtain from the tests and tests of use relevant and useful information for the redesign and refinement of the product and know how to communicate efficiently to others involved in the development of the product.

4. To develop an usability and accessibility report by reporting the tests carried out, in accordance with the most recognized standards and requirements of the clients.

## STUDY LOAD

| Type | Hours | Percentage |
|---|---|---|
| Hours large group | 45,0 | 27.27 |
| Hours small group | 15,0 | 9.09 |
| Self study | 105,0 | 63.64 |

**Total learning time:** 165 h

## CONTENTS

### Module 1 Project definition

**Description:**
Design a new or improved user experience.

**Specific objectives:**
Design, usability and user experience

**Related activities:**
- Project specifications: analysis and discussion.
- Selecting and planning the project

**Full-or-part-time:** 32h
Theory classes: 8h
Laboratory classes: 6h
Self study : 18h

**Module 2. Research applied to the project.**

**Description:**
User-centered inquiry techniques and representation of results

**Specific objectives:**
Know and apply research techniques during the conceptual phase. Learn to investigate in depth the needs and preferences of users, and the various elements of the context in which the product will be used. Know how to elaborate the data and synthesize the information in a clarifying, useful and inspiring way for the design process.

**Related activities:**
- Preparation of specific documentation
- Elaboration of a "Person"
- Preparation of a “User Journey Map”
- Make a storyboard

**Full-or-part-time:** 39h
Theory classes: 10h
Laboratory classes: 8h
Self study : 21h

**Module 3. Solving the project.**

**Description:**
Design Thinking + Human Centered Design.
In this module we will work to have some guidelines to face different project situations to provide innovation to products and services. It is necessary to understand the needs to introduce design solutions or adapt the existing technology, as well as to find new methods to visualize and evaluate the work to be carried out.

**Specific objectives:**
Generate opportunities and solutions that can be applied. Select the best solutions, improve them and try to implement them.

**Related activities:**
The students will participate in different group work to bring into practice the concepts exposed during the classes to raise new product designs or service designs

**Full-or-part-time:** 1h
Theory classes: 1h

## GRADING SYSTEM

Evaluation is ongoing. In the evaluation of student work submitted will be considered, the project in the group and the acquisition of valued content individual written tests. Memory projects and oral presentation will be assessed.

FINAL GRADE = Presentations 40% + Delivery Report 40% + Panels 20%

Being the continuous evaluation, the re-evaluation is not necessary.

## BIBLIOGRAPHY

**Basic:**
- Weinschenk, Susan. Diseño inteligente : 100 cosas sobre la gente que todo diseñador necesita saber. Madrid: Anaya Multimedia, 2021. ISBN 9788441543362.
- Van Gorp, Trevor. Design for emotion [on line]. Waltham: Morgan Kaufmann, 2012 [Consultation: 20/02/2024]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/9780123865311/design-for-emotion. ISBN 9780123865311.
- Cañas Delgado, José Juan. Personas y máquinas. Madrid: Pirámide, 2004. ISBN 8436818938.

**Complementary:**

- Norman, Donald A. El Diseño emocional : por qué nos gustan (o no) los objetos cotidianos. Barcelona: Paidós, 2005. ISBN 9788449317293.
- Sharp, Helen; Preece, Jennifer; Rogers, Yvonne. Interaction design : beyond human-computer interaction. 5th ed. Indianapolis, IN: Wiley, 2019. ISBN 9781119547259.
- Norman, Donald A. La Psicologia de los objetos cotidianos [on line]. 5a ed. San Sebastián: Nerea, 2011 [Consultation: 16/11/2022]. Available on: https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=29370110. ISBN 9788415042013.

## RESOURCES

**Audiovisual material:**

- http://www.interaction-design.org/- Libro-e AIPO
http://www.aipo.es/libro/libroe.php- DSI
http://www.epsevg.upc.edu/hcd/