

1. Cod 32510_ Name: Design and Accessibility

2. Credits: 5,00 --**Lecture:** 2,00 --**Practice:** 3,00 **Type of Course:** Elective
Degree: 2160-Master's Degree in Design Engineering

Module: 1-Elective subjects Semester A **Subject:** 1-Research and development in design
University Center: SCHOOL OF DESIGN ENGINEERING

3. Coordinator: Puyuelo Cazorla, Marina
Departament: GRAPHIC EXPRESSION IN ARCHITECTURE

4.References

Guía ¡Pregúntame sobre accesibilidad y ayudas técnicas!

Diseño inclusivo y accesibilidad a la cultura.

Puyuelo, Marina | Val Fiel, Mónica | Merino Sanjuán, Lola | Jaume Gual Ortí

Accesibilidad para personas con ceguera y deficiencia visual.

Luengo Jurdado, Soledad | Blanco Sanz, Rosa María | Martín Andrade, Pablo
Organización Nacional de Ciegos Españoles

Smithsonian Guidelines for Accessible Exhibition Design.

Janice Majewski

Accesible architecture

Meuser, Philipp

Mobiliario urbano: diseño y accesibilidad = Street furniture: design and accessibility /.

Puyuelo Cazorla, Marina | Val Fiel, Mónica | Saiz Mauleón, María Begoña | Merino Sanjuan, María Dolores
| Gual Ortí, Jaume | Torres Barchino, Ana

Reptes del disseny = Retos del diseño = Design challenges : [ciència, ètica i estètica en el projecte de disseny]

Accesible architecture.

A PROPOSAL OF AN EVALUATION MODEL UNDER THE PRINCIPLES OF UNIVERSAL DESIGN (The Design Society).

Jaume Gual Ortí | Joaquín Lloveras | Puyuelo, Marina and F. Romero

- Other texts and LINKS at Poliformat

Guía de Accesibilidad para Empresas

Wayfinding and signage.

Visual Impairment and urban orientation. Pilot study with tactile maps produced through 3D Printing.

GUAL ORTÍ, JAUME | Puyuelo Cazorla, Marina | Lloveras, Joaquim | Merino Sanjuan, Lola

Improving Tactile Map Usability through 3D Printing Techniques: An Experiment with New Tactile Symbols

Analysis of volumetric tactile symbols produced with 3D printing.

Gual Ortí, Jaume | Puyuelo Cazorla, Marina | Lloveras Macia, Joaquim

Analysis of volumetric tactile symbols produced with 3D printing.

Gual Ortí, Jaume | Puyuelo Cazorla, Marina | Lloveras Macià, Joaquín

5. Course Outline

The course shows and involves the designer in the needs and specific problems posed by multiple products and environments for different groups of users with functional limitations. For this purpose, the approach to the projects is the concept of inclusive design and the perspective of Design for all. This knowledge applied to the design of products and environments allows us to obtain designs with greater adaptation, safety and ease of use for a largest number of users.

The topic for the project change every year covering different areas to be improved and users with particular needs: transportation, elderly, blind people, etc. After the course, projects are displayed in an exhibition and become part of an open digital publication. During the course, different professionals and companies are invited to delve into particular problems and technologies applied to disability.

The course Design and Accessibility develop among other skills in design, the transversal competences "Critical Thinking " and "Ethical and Social Commitment".

6. Recommended Prior Knowledge

Ergonomics and conceptual design.

7. Student Outcomes

Specific Student Outcomes

003(GE) That students are able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.

14(ES) Design taking into account human factors and ergonomic criteria.

13(ES) To design taking into account the accessibility and integration of people with disabilities or with particular adaptation needs in daily life.

UPV-Generic Student Outcomes

(08) Effective communication

- Activities carried out to achieve the student outcomes

Case Study 1: DESIGN AND ADAPTATION OF A PRODUCT FROM THE PRINCIPLES OF UNIVERSAL DESIGN

Case Study 2: USABILITY AND ADAPTATION IN PRODUCTS FOR SPORTS PRACTICE – Potentially transferable solutions to other elements.

PROJECT PRESENTATION

- Detailed description of the activities

1- Analyze the following aspects: What does it offer: Flexible, intuitive use, Dimensions, Perceptual aspects, etc. How does it adapt? Contribution from the perspective of inclusive design.

2- Select a product intended for the sports field that provides an outstanding adaptation solution. Carry out a brief technical data sheet and analysis of the adaptation. To reflect on the evolution of this typology of products oriented to a certain activity.

- The project is presented in different phases of its process in class, developing graphic documentation as a preliminary project and finally, product definition. All the design phases are presented orally in different sessions.

- Assessment criteria

These activities are presented in a graphic document, which is presented and discussed in class in oral presentation of the works. All these tasks are valued in the classification of activities.

Each exercise is assessed on the basis of an evaluation heading.

(09) Critical thinking

- Activities carried out to achieve the student outcomes

Case Study 1 (CS1): DESIGN AND ADAPTATION OF A PRODUCT FROM THE PRINCIPLES OF UNIVERSAL DESIGN

Case Study 2 (CS2): USABILITY AND ADAPTATION IN PRODUCTS FOR SPORTS PRACTICE – Potentially transferable solutions to other elements. PROJECT PRESENTATION

Case Study 3 (CS3): ANALYSIS OF PRODUCTS ADAPTED TO GROUPS OF USERS WITH LIMITATIONS

Case Study (CS4): USABILITY IN DISPENSERS AND OTHER INTERACTIVE AUTOMATISMS FOR PUBLIC USE
Case Study

Case Study (CS5): ACCESSIBILITY IN THE URBAN and/or INDOORS ENVIRONMENTS

- Detailed description of the activities

CS1- Analyze the following aspects: What does it offer: Flexible, intuitive use, Dimensions, Perceptual aspects, etc. How does it adapt? Contribution from the perspective of inclusive design.

CS2 -Select a product intended for the sports field that provides an outstanding adaptation solution. Carry out a brief technical data sheet and analysis of the adaptation. Explain and figure out the evolution of this typology of products oriented to this certain activity.

CS3- Select a supplier of adapted products and technical aids and study the design solution and its specific target.

CS4- Select a dispensing machine for public use in which it is necessary to interact to obtain a tri or bidimensional product. Some examples are: beverage service machine, automatic teller machines, parking ticket regulation, bicycle management, etc.

-Observe how the object is and study carefully its interface

-Describe the steps and actions needed for using it and list them (use video description to document their usability)

-Analyze its features in terms of adaptation and limitations.

CS5- Study of the route on the plan, marking the milestones relative to solutions or accessibility problems

-Take notes about: Questions of perception and orientation, manoeuvring, obstacles, elements of use and scope.

-Build a Table including an INVENTORY of existing problems and solutions.

- Assessment criteria

These activities make up 35% of the rating. All activities are presented and discussed in class.

Each of the exercises is evaluated on the basis of an evaluation rubric and, in the case of the design project, the students carry out a self-evaluation and participate in the co-evaluation of the rest of the projects.

8. Syllabus

1. UNIVERSAL DESIGN AND INCLUSIVE DESIGN

- 1.1. Aspectos generales del significado de la accesibilidad al medio y la cultura de la inclusión.
- 1.2. Systems and levels of adaptation of products and environments.

2. ADAPTATION TO USER GROUPS AND AREAS

- 2.1. Main groups at risk of exclusion
- 2.2. Spaces and products adapted to groups or collectives: children, the elderly, specific areas or activities
- 2.3. Sports and accessibility (products, sports equipment and sports facilities)
- 2.4. Technical aids / Inclusive design

3. TYPES OF DISABILITY AND FUNCTIONAL LIMITATIONS

1. Sensory impairments: auditory and visual.
2. Motor disability; types of reduced mobility.
3. Dysfunctions and technical aids. Technologies involved.

4. ACCESSIBILITY TO THE PHYSICAL ENVIRONMENT

- 4.1. Public spaces of transit and stay in the urban environment and in public buildings.
- 4.2. Urban furniture and other products for accessible public space.
- 4.3. Accessibility outdoors: parks, gardens and natural spaces. Accessible beaches.
- 4.4. Accessibility to the monumental and cultural heritage and its surroundings. Itineraries and specific instruments.

5. DESIGN for HEARING IMPAIRED USERS

Products and systems for hearing: For personal use (hearing aids) and domestic use (amplifiers, telephones, etc.)
Characteristics and requirements.

6. VISUAL ACCESSIBILITY FACTORS

1. Visual impairment, perception and environmental factors.
2. Braille code and other tactile (haptic) systems.
3. Design and technologies for the blind.

9. Teaching and Learning Methodologies

<u>UN</u>	<u>LE</u>	<u>SE</u>	<u>PS</u>	<u>LS</u>	<u>FW</u>	<u>CP</u>	<u>AA</u>	<u>CH</u>	<u>NCH</u>	<u>TOTAL HOURS</u>
1	3,00	--	--	3,00	--	--	2,00	8,00	17,00	25,00
2	3,00	--	--	6,00	--	--	2,00	11,00	14,00	25,00
3	3,00	--	--	3,00	--	--	2,00	8,00	6,00	14,00
4	7,00	--	--	10,00	--	--	2,00	19,00	17,00	36,00
5	2,00	--	--	3,00	--	--	--	5,00	3,00	8,00
6	2,00	--	--	5,00	--	--	2,00	9,00	10,00	19,00
TOTAL HOURS	20,00	--	--	30,00	--	--	10,00	60,00	67,00	127,00

UN: Unit. LE: Lecture. SE: Seminar. PS: Practical session. LS: Lab sessions. FW: Field work. CP: Computer-mediated practice. AA: Assessment activities. CH: Contact hours. NCH: Non contact hours.

10. Assessment

Outline

- (03) Achievement tests (multiple choice)
- (11) Observation
- (10) Case
- (09) Project

All evaluation systems contribute in a summative and weighted way to the evaluation of the process of acquisition of the proposed competences.

Different types of cases of observation and analysis of situations, user problems, contexts and regulations applicable to universal design are carried out, in order the student reach the capacity to conceptualize and develop a design project from the perspective of inclusive design.

In case the student couldn't reach the learning objectives and competences of this course, it is possible to recover some of the tasks, the theory test and/or to present the design project in an ulter period. There are evaluation rubrics and co-evaluation rubrics, that are used at the different activities and the Design Project.

11. Absence threshold

Activity	Percentage
Lecture Theory	20%
Laboratory	20%