

Academic Year/course: 2022/23

25875 - Design Workshop II: Design Process and Methods

Syllabus Information

Academic Year: 2022/23

Subject: 25875 - Design Workshop II: Design Process and Methods

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 330 - Complementos de formación Máster/Doctorado

558 - Bachelor's Degree in Industrial Design and Product Development Engineering

ECTS: 6.0

Year: 558 - Bachelor's Degree in Industrial Design and Product Development Engineering: 2

330 - Complementos de formación Máster/Doctorado: XX

Semester: First semester

Subject Type: 330 - ENG/Complementos de Formación

558 - Compulsory

Module:

1. General information

1.1. Aims of the course

The general objective of the degree is to provide students with the competences that enable them to deal with knowledge management and the design skills necessary for the planning and development of the entire manufacturing process and the life of a product.

In this sense, the subject forms part of the group that aims to put into practice and develop these skills as they are acquired by the student, through experimentation.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>) and certain specific targets, so that the acquisition of the learning outcomes of the subject provides training and competence to the student to contribute to some extent to their achievement:

Goal 12: Ensure sustainable consumption and production patterns.

Target 12.2 By 2030, achieve sustainable management and efficient use of natural resources.

Target 12.5 By 2030, significantly reduce waste generation through prevention, reduction, recycling and reuse.

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2. Learning goals

2.1. Competences

Passing the subject, Students will be able to ...

CB02. Students can apply their knowledge to their work or vocation in a professional manner and have competences typically demonstrated through devising and defending arguments and solving problems within their field of study.

CB04. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

CB05. Students have developed those skills needed to undertake further studies with a high degree of autonomy.

GC01. Able to acquire basic knowledge of the profession of industrial design, to combine that generalist knowledge and expertise with those who generate innovative and competitive proposals.

GC03. Ability to design and develop design projects in aspects related to the nature of products and services, their relevance to the market, usage environments and user, and based on their manufacture, the selection of materials and processes most appropriate in each case considering relevant aspects such as quality and product improvement.

GC04. Ability to organize time effectively and coordinate activities to acquire new knowledge quickly and perform under pressure.

GC05. Capacity to collect, manage, analyze and synthesize information from various sources for the development of design

projects and product development. Capacity to use this documentation to obtain conclusions aimed at solving problems and making decisions with initiative, creativity and critical thinking, in order to generate new product concepts, new ideas and solutions.

GC06. Ability to generate the necessary documentation for the proper transmission of ideas through graphics, reports and technical documents, models and prototypes, oral presentations in Spanish and other languages.

GC07. Ability to use and master techniques, skills, tools and techniques and communication and others specific of design engineering needed for design practice.

GC08. Ability to learn continuously, to develop autonomous learning strategies and to work in multidisciplinary groups with motivation and determination to achieve goals.

SC11. Ability to analyze industrial design in its technological, aesthetic, historical, and cultural context, managing literature and visual sources and employing the specific technical vocabulary of industrial design and product development.

SC12. Ability to perform a generic approach of a design process, to structure it in stages, apply a methodology and select the design strategy.

SC14. Ability to define design specifications in order to develop relatively complex products up to a satisfactory technical grade.

BASIC COMPETENCES (CB);GENERAL COMPETENCES (GC); SPECIFIC COMPETENCES (SC).

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

-Learning is based on a theoretical understanding of content, explained in a lecture to the entire group, which are supplemented by case studies and applied exercises and a project. This practical and experimental learning allows setting the theoretical contents.

-Students perform a generic approach of a design process, to structure it in stages, apply a methodology and select the design strategy.

-Students define design specifications in order to develop relatively complex products up to a satisfactory technical grade, which includes the way and needs to develop the project.

-Learning is complemented by the implementation of various tools and techniques of analysis, such as functional analysis, formal, ergonomic, user and use analysis, materials, and processes, among others.

4.2. Learning tasks

The student will know and understand different methods of industrial design, its evolution and application possibilities depending on the project to develop. In general, it is disclosed the design process, applicable to any project design, Student experimentation allows particularizing and putting it in a particular case. In addition, the student will understand the need for the phase structure of design projects. You should find a solution to problems of medium complexity based on the proposals within the design process. Find the solution to problems of medium complexity based on the proposals within the design process. Develop a product proposal from a conceptual solution defined by the student. In general, it is disclosed the design process, applicable to any project design, so student experimentation allows you to particularize and putting it in a particular case. In addition, the student will understand the need for the phase structure of projects.

Distribution of learning activities will be as follows:
6 credits ECTS: 150 hours / student

- 12 h. Lecture/Theory session (large group sessions)
- 18 h. Practice session (medium group sessions)
- 30 h. Practice session (small group sessions)
- 15 h. Autonomous study
- 70 h. Autonomous work
- 5 h. Assessment

4.3. Syllabus

The course includes the following learning tasks:

- 1. Design methods. Historical overview and evolution. Current methods.
- 2. Process product design.

- 3. Phases and structure of the design process.
- 4. Brief design. (EDP) ??Product Design Specifications.
- 5. Product analysis. Context analysis of product, market and user.
- 6. Structural, Functional, Formal Analysis. Relationship between form-function, use / user / environment.

The case studies are divided into six blocks:

- 1. Problem identification
- 2. Problem definition
- 3. User needs
- 4. Exploration
- 5. Prototyping
- 6. Testing

4.4. Course planning and calendar

Schedule sessions

| Week (approx) | Theory + Case studies | Workshops |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1 y 2 | Industrial design methodologies. Design process | Module project |
| 3, 4, 5 y 6 | Analysis and techniques applied to design processes. Market and product Functional/formal analysis Usage and user analysis | Module project |
| 7 | Case Studies: Problem identification and definition | Module project |
| 8 | Case Studies: User needs | Project II |
| 9 | Case Studies: Exploration and concept selection | Project II |
| 10 y 11 | Case Studies: Prototyping | Project II |
| 12 y 13 | Case Studies: Testing | Project II |

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=25875>