



PRODUCT DESIGN AND DEVELOPMENT

Summer course 2025

COURSE INTRODUCTION:

This course is designed to teach students the foundational skills needed to design industrial products. The course will be divided into theoretical lessons, practical exercises, and hands-on project.

The specific brief linked to the Basque roots for this year is: "Design new solutions reusing discarded materials from the Basque traditional Cider Houses, combining circular design and craftsmanship". Students will be guided through the different steps of the design process, introducing them to: field work research, contextual research tools, concept generation and selection tools, circular design strategies, 3D modeling and rendering software and prototyping techniques, such as 3D printing and laser cutting. By the end, students will have the knowledge to design innovative products with a deep understanding of the available materials and user needs.

Objectives:

- Learn the process and methodology to develop new products.
- Identify user needs.
- Apply creativity techniques for concept development.
- Select and validate product concepts.
- Apply 3D modeling skills to visualize digital prototypes or renderings.
- Acquire the ability to manufacture low and high-fidelity prototypes using different techniques.

Methodology:

- The classes will be divided into:
 - o Theoretical sessions to explain the necessary knowledge to carry out the practical assignments.
 - o Practical sessions in which the students will develop a project based on the concepts explained in the theoretical classes.

Syllabus:

1. The design process:
 - Design methodology.
 - Brief analysis.
2. Design Research:
 - Context research.
 - User observation.
 - Interviews.
 - Site visit and fieldwork research.
3. Design context:
 - System of the product design.
 - Stakeholders in the design system – examples.
 - Circular design theory and waste-led design methodology.
 - Mindmaps.
4. Creativity and Idea Generation.
 - Brainstorming, analogies, biomimicry.
5. Concept Ideation & Selection.
 - Design techniques for concept creation
 - Rough prototyping sprints
6. CAD Modelling and Rendering.
 - Basics about part modeling and assemblies.
 - Rendering techniques with Keyshot software.

7. Prototyping:

- Additive manufacturing.
- Technologies, FDM training.

Evaluation:

The final evaluation of the course will be marked as Passed or Fail.

The final grade will be calculated as the sum of several team assignments. All the assignments will be related to one global project that students will work on for the two weeks.

The assignments will be the following:

- Definition of design goals (2 points).
- Concept generation including low fidelity mock-ups (2 points)
- Concept selection (1 point)
- Detailed Modeling including high fidelity prototypes (3 points)
- Final presentation (2 points)

Each assignment will have several marking criteria with a corresponding weighting. To pass the course it is necessary to achieve an overall mark of 5 points.