

PRODUCT DESIGN AND DEVELOPMENT

Objectives:

- To learn the process to develop new products.
- To identify user needs.
- To apply creativity techniques for concept development.
- To select and validate product concepts.
- To acquire the ability to manufacture low and high-fidelity prototypes using different techniques.

Methodology:

- The classes will be divided into:
 - Theoretical classes to explain the necessary knowledges to carry out the practical assignments
 - Practical classes 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.
 - Context research.
2. Design context and mindmaps
 - System of the product design.
 - Stakeholders in the design system – examples.
 - Circular design.
3. Creativity and Idea Generation.
 - Brainstorming, SCAMPER, analogies, biomimicry.
4. Concept Selection.
 - Criteria, Pugh matrix.

5. CAD Modelling with CREO.
 - Basics about part modeling (extrude, revolve, etc.).
 - Basics about assemblies.

6. Prototyping: 3D printing.
 - Technologies, FDM training.

Evaluation:

The maximum grade for the course will be 100 points.

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 for the two weeks.

The assignments will be the following:

- Definition of design goals (20 points)
- Concept generation including low fidelity mock-ups (20 points)
- Concept selection (10 points)
- Detailed Modelling including high fidelity prototypes (30 points)
- Final presentation (20 points)

Each assignment will have several marking criteria with a corresponding weighting.

To pass the course it is necessary to get to an overall mark of 50 points.