1. OVERVIEW

Subject Area	Materials, models and prototypes
Degree	Bachelor's Degree in Design
School/Faculty	Architecture, Engineering and Design
Year	First
ECTS	6 ECTS
Type	Optional
Language(s)	Spanish/English
Delivery Mode	On campus
Semester	Second semester
Academic Year	2024/2025
Coordinating professor	

2. INTRODUCTION

This subject deals with diverse materials from the product designer's viewpoint, taken in the initial phase of a project which runs from the modelling phase to the creation of the first prototypes.

We introduce students to both natural and synthetic material, including stone, metallic, wooden, plastic, textile and rubber materials among others.

To transform these materials into models and prototypes, there are many processes, tools and machinery in the product workshop which students will learn to use. We will also cover some traditional manufacturing techniques.

3. SKILLS AND LEARNING OUTCOMES

Key skills (CB, by the acronym in Spanish):

- CB1: Students have shown their knowledge and understanding of a study area that builds on general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.
- CB2: Students can apply their knowledge to their work or vocation in a professional manner and possess the skills which are usually evident through the forming and defending of opinions and resolving problems within their study area.
- CB3: Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.
- CB4: Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
- CB5: Students have developed the learning skills necessary to undertake further study in a much more independent manner.

Transversal skills (CT, as per the Spanish acronym):

- CT1: Independent Learning: the ability to choose the most effective strategies, tools and opportunities for independent learning and implementation of what they have learnt.
- CT5: Ability to put knowledge into practice, using the skills acquired in the academic field in mock situations based faithfully on real life issues in the profession they are studying for.
- CT17: Teamwork: ability to integrate and collaborate actively with other people, areas and/or organisations to reach common goals.

Specific skills (CE, as per the Spanish acronym):

- CE27: Awareness of the characteristics of materials and how they are used in models and prototypes for the design process.
- CE29: Ability to design and manufacture prototypes of simple furniture.

Learning outcomes (RA, as per the Spanish acronym):

- RA6: Communicate concepts and requirements to other designers or collaborators, clients and employees. These forms of communication will be verbal, written, through 2-D and 3-D media, and at levels of detail from sketches and abstracts to the most specified representations.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes
CB1, CB2, CB3, CB4, CB5 CT1, CT5, CT17 CE27, CE29	RA6: Communicate concepts and requirements to other designers or collaborators, clients and employees. These forms of communication will be verbal, written, through 2-D and 3-D media, and at levels of detail from sketches and abstracts to the most specified representations.

4. CONTENTS

The subject matter is divided into six units:

Unit 1. Models in a virtual world

- 1.1. Why do we make models?
- 1.2. What type of models can we make?
- 1.3. Materials for basic processes.
- 1.4. Work organisation. Design of processes and planning.

Unit 2. From cardboard to wood

- 2.1. Design of an object from plans.
- 2.2. Work models in cardboard and presentation model made from wood.

Unit 3. From paper to sheet.

- 3.1. Design of a folded sheet object.
- 3.2. Paper models.

Unit 4. Models of volume.

- 4.1. Polystyrene and finishes. Models of small objects.

Unit 5. Styrene models.

- 5.1. Styrene, formats, handling and finishes.

Unit 6. Presentation of projects

- 6.1. Exhibition of designs and corresponding models with presentation of processes.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- 1. Lecture.
- 2. Collaborative learning.
- 4. Project-based studies (PBS).
- 5. Learning based on workshop teaching

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On-campus:

Learning activity	Number of hours
Attendance and participation in activities	6.25h (on-site)
Directed learning, practical exercises and problem-solving	25h (20% on-site)
Project presentation	12.5h (on-site)
Integrated group project	12.5h (40% on-site)
Research work and projects	62.5h (40% on-site)
Self-study	12.5h (off-site)
Tutorials, academic follow-up and assessment	18.75h (on-site)
TOTAL	150 h

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the course, are as follows:

On-campus:

Assessment method	Weight
Submission and/or presentation of projects	90-100

On the Virtual Campus,

when you open the course, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

7.1. Ordinary examination period

To pass the course in the ordinary examination period you must obtain a grade of 5.0 or more out of 10.0 in the final grade (weighted average) for the subject.

In any case, you must achieve a grade greater than or equal to 4.0 in the final assessment so this can be used for the average with the other activities.

We will assess:

- The ability to organise and plan work efficiently.
- The ability to gather relevant information and then suitably analyse, synthesise and process this information.
- Resources for solving problems and taking decisions in line with the final objectives.
- The ability to demonstrate critical thinking.
- The appropriate assimilation of knowledge and resources taught in class.
- Interest, work and effort in performing designated tasks.

7.2. Extraordinary examination period

To pass the course in the extraordinary examination period you must obtain a grade of 5.0 or more out of 10.0 in the final grade (weighted average) for the subject.

In any case, you must achieve a grade greater than or equal to 4.0 in the final assessment so this can be used for the average with the other activities.

Activities not passed in the ordinary examination period, or those not delivered, must now be delivered after having received the relevant corrections to them by the lecturer.

8. SCHEDULE

The schedule with delivery dates of assessable activities in the course is indicated in this section:

Assessable activities	Date
Activity 1. Design of an object from plans and work models in cardboard and presentation model made from wood	Week 2-4
Activity 2. Design of a folded sheet object and paper models	Week 5-6
Activity 3. Design of a small object and models from polystyrene	Week 7-10
Activity 4. Models in antishock polystyrene	Week 11-14
Activity 5. Project presentation	Week 15
Activity 6. Subject portfolio	Week 15

The schedule may be subject to modifications for logistical reasons of the activities. Students will be informed of any changes in due time and course.

9. BIBLIOGRAPHY

The reference work for following this subject area is:

- Hallgrimsson, B. (2012). *Diseño de producto: maquetas y prototipos.* Promopress
- Conejero, A & Ayala, P. (2019) *Guía para diseñadores. Prototipado Industrial*. Parramón
- http://www.materialconnexion.today/.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

The Educational Guidance and Diversity Unit offers support throughout your time at university to help you with your academic achievement. One of the main pillars of our educational policy is the inclusion of students with special educational needs, universal accessibility to the different university campuses and equal opportunities.
This unit offers students:

1. Support and monitoring through personalised counselling and programmes for students who need to improve their academic performance.
2. Promotion of diversity, with curricular changes possible in terms of methodology or assessment for those students with special educational needs in order to provide equal opportunities for all our students.
3. We also offer students a range of educational extracurricular resources for developing a variety of skills to enhance their personal and professional development.
4. Career guidance by offering tools and advice to students with doubts regarding their professional careers or those who believe they have chosen the wrong line of study.

Students who need educational support can contact us at:
orientacioneducativa@universidadeuropea.es

11. SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to complete our satisfaction surveys to identify strengths and areas for improvement for staff, degree courses and the learning process.

These surveys will be available in the surveys area of your virtual campus or by email.

Your opinion is essential to improve the quality of the course.

Many thanks for taking part.