

Course Unit	Models and Prototypes	Field of study	Design
Bachelor in	Art and Design - Minor in Design	School	School of Education
Academic Year	2023/2024	Year of study	2
Type	Semestral	Semester	2
Workload (hours)	135	Contact hours	T - , TP 18 , PL 20 , TC - , S - , E - , OT 16 , O -
Level	1-2	ECTS credits	5.0
Code	9898-662-2205-00-23		

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Jacinta Helena Alves Lourenço Casimiro da Costa

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Produce models and / or prototypes as a result of the three-dimensional formalization of ideas, concepts and projects;
2. Make models, validation / test models, presentation models in the different phases of the intellectual production process of an object / product;
3. Plan the three-dimensional execution of a prototype or mock-up;
4. Carry out prototypes, selecting the appropriate scale, materials, technologies and production methods;
5. Know the characteristics and physical qualities of materials and their efficient use;
6. Interpret the fulfillment of the proposed objectives and develop new solutions based on the data resulting from the critical analysis of the model or prototype developed .

Prerequisites

Before the course unit the learner is expected to be able to:
Without pre-conditions

Course contents

1. Types of mock-ups; 2. Techniques and methods of making mock-ups; 3. Techniques and methods of manufacturing prototypes; 4. Prototyping technologies; 5. Assembly; 6. Finishes and color surface treatments.

Course contents (extended version)

1. Types of mock-ups;
 - Study / volume, no functional, functional.
2. Techniques and methods of making mock-ups;
3. Techniques and methods of making prototypes;
4. Prototyping technologies;
 - Processing equipment and techniques;
5. Assembly;
6. Finishes and color surface treatments;

Recommended reading

1. ALVES, F. (2001). Protoclick - Prototipagem rápida. Porto: FEUP;
2. CHEE KAI, C. , KAH FAI L. , (2015). 3D Printing and Additive Manufacturing: Principles And Applications. Fourth Edition, World Scientific;
3. GIBSON, I. , ROSEN, D. (2013). Additive Manufacturing Technologies: 3D Printing, Rapid Prototyping, and Direct Digital Manufacturing, Springer;
4. HALLGRIMSSON, B. (2013). Prototyping and Modelmaking for Product Design Laurence King Publishing ;
5. SHIMIZU, Y. , KOJIMA, T. , TANO M. , MATSUDA, S. (2000). Models and Prototypes. Tokyo, Graphic – SHA.

Teaching and learning methods

In this UC is intended to promote learning in a sequential, progressive way. The following teaching methodologies will be used: theoretical content exposition, technical demonstrations, experimental work and practical work proposals for the application of theoretical contents.

Assessment methods

1. CONTINUOUS EVALUATION - (Regular, Student Worker) (Final)
 - Projects - 60%
 - Reports and Guides - 30%
 - Presentations - 10%
2. EXAM EVALUATION - (Regular, Student Worker) (Supplementary, Special)
 - Projects - 60% (nº 4 art. 7 Frequency and Evaluation Regulations - Classification obtained in Continuous Assessment)
 - Practical Work - 40% (Theoretical practical work proposal with the respective technical report and oral presentation.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Jacinta Helena Alves Lourenço Casimiro da Costa	Helena Maria Lopes Pires Genésio	António José Santos Meireles	Carlos Manuel Costa Teixeira
19-02-2024	20-02-2024	21-02-2024	25-02-2024