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| <b>POLI</b><br>ESCOLA SUPERIOR<br>TECNOLOGIA<br>GESTÃO<br><b>TÉCNICO</b><br><b>GUARDA</b> | <b>SUBJECT DESCRIPTION</b> | <b>MODELO</b><br>PED.013.03 |
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|---|----------------------------|------------------------------|------------|--------------|--------------|---|
| Course  | Design de Equipamento      |                              |            |              |              |   |
| Subject   | Técnicas de Investigação   |                              |            |              |              |   |
| Academic year   | 2023-2024                  | Curricular year              | 1st        | Study period | 1st semester |   |
| Type of subject   | Compulsory                 | Student workload (H)         | Total: 140 | Contact: 60  | ECTS         | 5 |
| Professor(s)  | Rui Filipe Cardoso Carreto |                              |            |              |              |   |
| <input checked="" type="checkbox"/> Area/Group Coordinator<br><input type="checkbox"/> Head of Department |                            | José Reinas dos Santos André |            |              |              |   |

## PLANNED SUBJECT DESCRIPTION

### 1. LEARNING OBJECTIVES

The course program provides that student develop the following competencies: 1- Recognize design as a process of building solutions to problems arising in the field of product development. 2- Identify and characterize the theoretical concepts associated to the discipline of design and its methodologies. 3- Identify and apply design methodologies associated with design in the product research and development process.

### 2. PROGRAMME

Being this the curricular unit of investigation in design, it is intended to use a pedagogical language that allows an individual structuring of the methodology in design, from the direction of the formulation of solutions to simple problems where the central theme is the products.

We can summarize the program by the following topics:

#### 1. Theoretical Concepts of Product Design

##### 1.1.1 Design Definition

##### 1.1.2 Fundamental concepts

##### 1.1.3 The problem:

- The world / the system / the context
- The solution
- The development of the solution
- Identification of the problem
- Generation of several hypotheses
- Tests
- Implementation

##### 1.1.4 The concept of "good design"

##### 1.1.5 Dimensional deontological design

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### 3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

Considering the main objective of the Course to develop the ability to investigate, know and apply different methodologies in the development of products, the program contents presented contemplate this objective.

### 4. MAIN BIBLIOGRAPHY

BENYUS, Janine M. – Biomimicry: Innovation Inspired by Nature. New York: Harper Collins. 1998.

BONSIEPE, Gui -Teoria e Prática do Design Industrial. Lisboa: CPD-Centro Português de Design, 1992.

BURDEK, Bernhard – Design history, theory and practice of product design. Basel: ed Birkhauser, 2005.

LEMONS, Sérgio - Trilhos na Floresta: Imersões criativas no âmbito do Design Social. Aveiro: Universidade de Aveiro. 2014.

MALDONADO, Tomás – Design Industrial. Lisboa: Edições 70, 1991.

MUNARI, Bruno - Das Coisas Nasceram as Coisas. Lisboa: Ed. Presença, 1981.

PAPANEK, Victor – Design for the Real World. Human Ecology and Social Change. London: Thames and Hudson, 1985 (edição original 1971).

VEZZOLI, Carlo; MANZINI, Ezio – Design for Environmental Sustainability. London: Springer, 2008.

WALKER, Stuart – Sustainable by Design. Explorations in Theory and Practice. London: Earthscan, 2006.

MAU, Bruce – Massive Change. London: Phaidon, 2004.

PILLOTON, Emily – Design Revolution: 100 Products That Are Changing People's Lives. London: Thames & Hudson, 2009.

### 5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

The curricular unit of Research Techniques is organized in theoretical-practical and practical classes. The TP component is based on the exposition of concepts and contents that aim to promote reflection and debate in the classroom. The teaching methodology used in the practice intends to consolidate the knowledge acquired in the theoretical-practical classes, through the accomplishment of practical works, which will be the final presentation.

Methodology of evaluation:

Theoretical-practical component (40%) + practical component (60%)

The theoretical-practical component will be evaluated through a written test to be carried out during the class period. It focuses on the exposition of concepts and programmatic contents, with the application of the knowledge acquired in the practical classes.

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The practical component will be evaluated through practical work developed autonomously and in groups accompanied in class. Work will be carried out to consolidate the knowledge of the theoretical-practical classes, the understanding of the topics in question and the formation of a critical attitude.

#### 6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The lectures consist essentially on the presentation of contents and on the application of different methodological tools, typical of research and product design practice, where it is intended to provide the development of all skills already indicated.

#### 7. ATTENDANCE

In this curricular unit, 2/3 of attendance at classes will be mandatory for students who opt for the continuous assessment process.

#### 8. CONTACTS AND OFFICE HOURS

ruicarreto@ipg.pt | Monday – 4-6pm

#### DATE

25 de setembro de 2023

#### SIGNATURES

Area/Group Coordinator

\_\_\_\_\_  
(signature)

Professor

\_\_\_\_\_  
(signature)