

Course guide

320142 - DP1 - Product Design I

Last modified: 19/04/2023

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 717 - DEGD - Department of Engineering Graphics and Design.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Francisco Bermúdez Rodríguez

Others: Francisco Bermúdez Rodríguez
Lluís Roura Màrmol

PRIOR SKILLS

General understanding of geometry and space, CAD, industrial standards and graphical representations in the industry.
Basic knowledge of materials and processes of production and manufacturing.
Spatial vision: abstraction and synthesis required for new product design
Graphical Manual Dexterity: sketches and freehand drawing.
Creativity

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CED41-DIDP. Mastery of tools related to the design process. (Specific technology module: Industrial Design)
CED42-DIDP. Knowledge of design tools to apply in product design and redesign projects. (Specific technology module: Industrial Design)
CED43-DIDP. Knowledge of design methodology. (Specific technology module: Industrial Design)
CED46-DIDP. Ability to design packaging and packaging materials. (Specific technology module: Industrial Design)
CED47-DIDP. Ability to design interfaces. (Specific technology module: Industrial Design)
CED48-DIDP. Ability to understand and apply the creative process and its organization. (Specific technology module: Industrial Design)
CED49-DIDP. Ability to analyze and synthesize bi and three-dimensional forms. (Specific technology module: Industrial Design)

CED54-DIDP. Ability to analyze, design, and project in design workshops. (Specific technology module: Industrial Design)
CED58-DIDP. Practical knowledge of industrial design methodology. (Specific technology module: Industrial Design)

Transversal:

CT03 N3. Efficient oral and written communication - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

TEACHING METHODOLOGY

- Lab based learning sessions with presentation of concepts, techniques and procedures, combined with solving exercises and practical work with computer lab and CAD.
- Individual study and preparation exercises.
- Project based cooperative learning, which focuses on problem solving and projects evaluated together.
- Visits to industries related to the subject: There will be various views related to the container industry (plastic, metal and glass), packaging (cardboard) and labelling, so that students become familiar with the design, shaping materials, techniques and technologies of the discipline of engineering.
- Theoretical foundations will be introduced during the sessions.
- Students must study independently to assimilate the concepts.
- Students will use ATENEA and other tools (Web 2.0).
- The final project will take place during the last two months of the course, in groups of 3 people.
- The presentation of this project will be presented at the end of the semester.

LEARNING OBJECTIVES OF THE SUBJECT

- Introduce concepts, techniques and methodologies in the field of packaging and packaging of industrial products.
- Develop and exercise the imagination space.
- Develop the ability to imagine, create and perform new product ideas.
- Analyze, evaluate and validate new designs of packaging
- Choose packaging materials based on the product and its application
- Define and manage development projects
- Define and prepare packaging technologies based on requirements and product requirements

STUDY LOAD

Type	Hours	Percentage
Hours large group	15,0	10.00
Self study	90,0	60.00
Hours small group	45,0	30.00

Total learning time: 150 h

CONTENTS

TOPIC 1: History and evolution of packaging

Description:

- 1.1. Introduction
- 1.2. The packaging in the postmodern era
- 1.3. Social and economic changes
- 1.4. Technological advances
- 1.5. Changes in design practice

Related activities:

- AV0 Introduction to the course and the course
AV1 Research and analysis. History.

Full-or-part-time: 10h

- Theory classes: 2h
Laboratory classes: 2h
Self study : 6h

TOPIC 2: Type of materials (working tools) and its use

Description:

- Definitions, functions and characteristics of packaging
- Lifecycle
- Structures of materials
- Introduction to logistics circuits
- Pools

Related activities:

AV2: Analysis of packaging (shapes, geometry, dimensions, volumes and materials).
Design in 3D. Changes and improvements of different models.

Full-or-part-time: 10h

Theory classes: 2h

Laboratory classes: 2h

Self study : 6h

TOPIC 3: Packaging, waste and environment. Regulations

Description:

- Consumer points, recollection points
- Sorting and separation companies
- Facilities for recycling and energy recovery
- Spanish and European Regulations
- Introduction to local regulations

Related activities:

AV3: Packaging Design I. Prototypes in 3D.

Full-or-part-time: 10h

Theory classes: 2h

Laboratory classes: 2h

Self study : 6h

TOPIC 4: Methodology for packaging design

Description:

- Stages of the packaging design
- Industrial specialties involved
- General considerations of a packaging project
- Evaluation of a packaging project
- Ecodesign introduction

Related activities:

AV4 Packaging Design II (complex geometries). Prototypes in 3D.

Full-or-part-time: 11h

Theory classes: 2h

Practical classes: 3h

Laboratory classes: 6h

TOPIC 5: Common materials used

Description:

- Glass
- Paper and cardboard
- Metal
- Plastic
- Compound, complex and multilayer packaging
- Wood

Related activities:

AV5: Visits scheduled industries. Glass, plastic, metal and cardboard. Write a report and conclusions.

Full-or-part-time: 30h

Theory classes: 6h

Practical classes: 6h

Self study : 18h

TOPIC 6: Packaging

Description:

- Unit load
- Packing
- Features to meet
- Risk Factors
- Materials for packaging
- Packaging protection

Related activities:

AV6: Formation of simple and complex packaging. Developments. Deliverable 6.

Full-or-part-time: 13h

Theory classes: 2h

Laboratory classes: 3h

Self study : 8h

TOPIC 7: Color in packaging

Description:

- Attributes of color
- Effects of printing optical size and accumulation
- Psychological colors
- Color applied to packaging and labels
- Research Plan for the use of color

Related activities:

AV7: Final Project and development of packaging for a complete family of products. Introduction

Full-or-part-time: 8h

Theory classes: 2h

Laboratory classes: 1h

Self study : 5h

TOPIC 8: Colour in packaging

Description:

- Introduction
- Types of labels
- Applying tags
- Ecolabel
- Labeling of dangerous products

Related activities:

AV7: Final Project and development of packaging for a complete family of products.

Full-or-part-time: 8h

Theory classes: 2h

Laboratory classes: 1h

Self study : 5h

TOPIC 9: Methods and technologies for printing

Description:

- Introduction and classification of printing methods
- Relief procedures
- Vacuum procedures
- Plane procedures
- Other procedures

Related activities:

AV7: Final Project and development of packaging for a complete family of products.

Full-or-part-time: 7h

Theory classes: 2h

Laboratory classes: 1h

Self study : 4h

TOPIC 10: Management and design of a packaging

Description:

- Market sectors, aspirations and moodboard. Research.
- Briefing, research and inspirations
- Generating concepts and presentation
- Selection and development of concepts
- Models and Prototypes

Related activities:

AV7: Final Project and development of packaging for a complete family of products.

Full-or-part-time: 28h

Theory classes: 4h

Laboratory classes: 7h

Self study : 17h

TOPIC 11: Logistics and packaging

Description:

- Pallets and palletising
- Types of pallets and AECOC recommendations
- Optimization of pallets for transportation and distribution
- Automatic palletizing
- Maintenance
- Principles of storage and storage of finished products

Related activities:

AV7: Final Project and development of packaging for a complete family of products.

Full-or-part-time: 15h

Theory classes: 4h

Laboratory classes: 2h

Self study : 9h

GRADING SYSTEM

Continuous evaluation model will be applied in order to evaluate both self-employment and teamwork:

- Activities and deliveries 30%
- First individual control 20%
- Second control 30%
- Report and oral presentation..... 20%

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept.

If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

BIBLIOGRAPHY

Basic:

- Stewart, Bill. Packaging : manual de diseño y producción. Barcelona: Gustavo Gili, cop. 2008. ISBN 9788425222313.
- Vidales Giovannetti, Ma. Dolores. El mundo del envase : manual para el diseño y producción de envases y embalajes. México: Ediciones de G. Gili : Universidad Autónoma Metropolitana. Unidad Azcapotzalco, cop. 2003. ISBN 9688874108.
- Cervera Fantoni, Ángel Luis. Envase y embalaje: la venta silenciosa. 2a ed. Madrid: ESIC, 2003. ISBN 9788473563390.
- Packaging 01: claves del diseño. Barcelona: Gustavo Gili, 2009. ISBN 9788425223037.

RESOURCES

Other resources:

Jacques, J. & Evrard, B. (2010): The Package Design Book. From The Winners of The Pentawards Pacakage Design Prize. 2008 To 2010. Editorial Taschen, Köln (Germany). ISBN: 978-3-8365-1997-7

Albarrán, G.: Diseño de envases y embalajes. Apuntes de la Universidad de Londres para la Licenciatura en Diseño Gráfico. Disponible en: http://www.astraph.com/udl/biblioteca/antologias/disenio_envases_embalajes.pdf />Gómez, S. (2007): El gran libro de Solidworks Office Professional. Marcombo, Barcelona. ISBN: 978-84-267-1458-9.