

320142 - DP1 - Product Design I

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 717 - EGE - Department of Engineering Presentation
Academic year: 2019
Degree: BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Francisco Bermúdez Rodríguez

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:

1. DES: Knowledge of design tools for their use in design projects and product redesign.
2. DES: Capability for packaging design .
3. DES: Capability to know and apply the organization of a creative process
4. DES: Ability to analyse and describe two- and three-dimensional shapes.

Transversal:

5. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 2. Applying sustainability criteria and professional codes of conduct in the design and assessment of technological solutions.
6. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
7. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
8. 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.

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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

Total learning time: 150h	Hours large group:	15h	10.00%
	Hours medium group:	0h	0.00%
	Hours small group:	45h	30.00%
	Guided activities:	6h	4.00%
	Self study:	84h	56.00%

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Content

<p>TOPIC 1: History and evolution of packaging</p>	<p>Learning time: 10h Theory classes: 2h Laboratory classes: 2h Self study : 6h</p>
<p>Description:</p> <ol style="list-style-type: none"> 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 <p>Related activities:</p> <p>AV0 Introduction to the course and the course AV1 Research and analysis. History.</p>	
<p>TOPIC 2: Type of materials (working tools) and its use</p>	<p>Learning time: 10h Theory classes: 2h Laboratory classes: 2h Self study : 6h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Definitions, functions and characteristics of packaging · Lifecycle · Structures of materials · Introduction to logistics circuits · Pools <p>Related activities:</p> <p>AV2: Analysis of packaging (shapes, geometry, dimensions, volumes and materials). Design in 3D. Changes and improvements of different models.</p>	

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<p>TOPIC 3: Packaging, waste and environment. Regulations</p>	<p>Learning time: 10h Theory classes: 2h Laboratory classes: 2h Self study : 6h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Consumer points, recollection points · Sorting and separation companies · Facilities for recycling and energy recovery · Spanish and European Regulations · Introduction to local regulations <p>Related activities:</p> <p>AV3: Packaging Design I. Prototypes in 3D.</p>	
<p>TOPIC 4: Methodology for packaging design</p>	<p>Learning time: 11h Theory classes: 2h Practical classes: 3h Laboratory classes: 6h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Stages of the packaging design · Industrial specialties involved · General considerations of a packaging project · Evaluation of a packaging project · Ecodesign introduction <p>Related activities:</p> <p>AV4 Packaging Design II (complex geometries). Prototypes in 3D.</p>	

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<p>TOPIC 5: Common materials used</p>	<p>Learning time: 30h Theory classes: 6h Practical classes: 6h Self study : 18h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Glass · Paper and cardboard · Metal · Plastic · Compound, complex and multilayer packaging · Wood <p>Related activities:</p> <p>AV5: Visits scheduled industries. Glass, plastic, metal and cardboard. Write a report and conclusions.</p>	
<p>TOPIC 6: Packaging</p>	<p>Learning time: 13h Theory classes: 2h Laboratory classes: 3h Self study : 8h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Unit load · Packing · Features to meet · Risk Factors · Materials for packaging · Packaging protection <p>Related activities:</p> <p>AV6: Formation of simple and complex packaging. Developments. Deliverable 6.</p>	

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<p>TOPIC 7: Color in packaging</p>	<p>Learning time: 8h Theory classes: 2h Laboratory classes: 1h Self study : 5h</p>
<p>Description:</p> <ul style="list-style-type: none"> · 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 <p>Related activities:</p> <p>AV7: Final Project and development of packaging for a complete family of products. Introduction</p>	
<p>TOPIC 8: Colour in packaging</p>	<p>Learning time: 8h Theory classes: 2h Laboratory classes: 1h Self study : 5h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Introduction · Types of labels · Applying tags · Ecolabel · Labeling of dangerous products <p>Related activities:</p> <p>AV7: Final Project and development of packaging for a complete family of products.</p>	

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<p>TOPIC 9: Methods and technologies for printing</p>	<p>Learning time: 7h Theory classes: 2h Laboratory classes: 1h Self study : 4h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Introduction and classification of printing methods · Relief procedures · Vacuum procedures · Plane procedures · Other procedures <p>Related activities:</p> <p>AV7: Final Project and development of packaging for a complete family of products.</p>	
<p>TOPIC 10: Management and design of a packaging</p>	<p>Learning time: 28h Theory classes: 4h Laboratory classes: 7h Self study : 17h</p>
<p>Description:</p> <ul style="list-style-type: none"> · Market sectors, aspirations and moodboard. Research. · Briefing, research and inspirations · Generating concepts and presentation · Selection and development of concepts · Models and Prototypes <p>Related activities:</p> <p>AV7: Final Project and development of packaging for a complete family of products.</p>	

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<p>TOPIC 11: Logistics and packaging</p>	<p>Learning time: 15h Theory classes: 4h Laboratory classes: 2h Self study : 9h</p>
<p>Description:</p> <ul style="list-style-type: none"> · 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 <p>Related activities:</p> <p>AV7: Final Project and development of packaging for a complete family of products.</p>	

Qualification 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.

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Bibliography

Basic:

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.

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.

Others 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/disenos_envases_embalajes.pdf

Gómez, S. (2007): El gran libro de Solidworks Office Professional. Marcombo, Barcelona. ISBN: 978-84-267-1458-9.