Course guide
340076 - TAD2-D4O17 - Design Workshop II

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Unit in charge: Vilanova i la Geltrú School of Engineering
Teaching unit: 717 - DEGD - Department of Engineering Graphics and Design.
702 - CEM - Department of Materials Science and Engineering.
712 - EM - Department of Mechanical Engineering.
732 - OE - Department of Management.
737 - RMEE - Department of Strength of Materials and Structural Engineering.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).

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

LECTURER

Coordinating lecturer: Manuel López Membrilla

Others: Departament 702-CEM: Joan Vicent Castell Balaguer, Eulalia Nogues Boada.
Departament 712-EM: Marc Escolà Fernández.
Departamnet 717-EGiD: Manel L. Membrilla, Alba Torras.
Departament 732-OE: Josep Maria Colomer Mur.
Departament 737-RMEE: Antoni Andreu Torras.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:
1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
2. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.
3. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
4. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.

TEACHING METHODOLOGY

- Being the Design Workshop 2 (TAD2), the second of the different Design Workshops that are part of the Degree in Design Engineering and Product Development, this Design Workshop will be attributed the so-called: DETAIL DESIGN Workshop .
- In the different Sessions of Workshop of Design 2 (TAD2) will expose the contents and will introduce the basic theoretical concepts and especially the practical content Project of the different Subjects linked to the different Departments that form and integrate the asignatura of TAD2, with practical applications and convenient examples to facilitate their understanding.
The student must be able to develop individually the different activities related to all the subjects that make up the project or proposed needs, then integrating them into the working group, called Workshop Group or Working Group (WG).

- Design Workshop Practices 2 are based on the main concept of the so-called Reverse Engineering on Products existing on the market. formed by:
1) Sessions to define the existing Products and the possibilities of works or Projects to be developed by each WG.
2) Complement with global or specific comments so that students can develop the proposed projects.
3) Follow guided to get a result.
4) Handling of existing products: disassembly and assembly of products. Students will define a Technical Report of the Analyzed Product and propose improvements or solutions to the analyzed and developed products.
- Sessions in the Design Workshop 2 (TAD2) will include:
1) Defined and guided follow-up to achieve objectives and results.
2) Handling of existing products: disassembly and assembly of products.
3) A Technical Report. Definition and justification of the different modules and components that make up the existing product analyzed.
4) Interaction between Product and User.
5) Proposal for redesign or improvement of the analyzed product.
6) Global memory. Preparation of the corresponding documentation.
7) Possibility to make the corresponding model. (prototypes in possible media and solutions).
- The final result of the WG Project is the compendium of all the Specific Subjects analyzed in the different activities and agreed in the WG from the synthesis of all the individual Activities of each student on the different Subjects treated in the Project.
-This result in the WG Project contemplates and implies a very important part in the development of Personal Activities of the student, as well as those of group level of the WG. On the other hand, this result must also reflect, and no less important, the very Management of the Project to be developed by the WG with its own planning and monitoring activities for the good development of the Project to be defined.
- The continuous attendance at the Design Workshops 2 are of vital importance and importance to achieve a good follow-up, development and final result of the Project, both in the activity of individual level and that of group level.

- Autonomous learning is oriented towards the presentation of projects, as well as the search for complementary information and the manipulation of existing products.

LEARNING OBJECTIVES OF THE SUBJECT

- To acquire a general and integral basic training on the products, as well as to become familiar and to know the different parts that form them. Internal and external analysis of a product. Justification and definition of the different modules and component of the same.
- Enhance the skill, ingenuity and ability to analyze and manipulate an industrial product.
- To develop a minimum technical capacity that allows to solve effectively the proposed projects and the ideas that they themselves generate.
- Interpret the process of product development from the basic theoretical and conceptual knowledge of the different subjects that make up the Design Workshop 2.
- Acquire an overview of the product. Product and its components. Structure of a product. Principle of operation and use of the different parts of a product.
- Enhance the skill, ingenuity and ability to analyze, manipulate and contextualize an industrial product. As well as its own content in the definition and management of a Design or Product Engineering Project.
- Expand concepts of Ergonomics and Product.
- Product Overview. Product and its life cycle.
- To develop a critical and self-critical attitude towards their own activities and the activities and work of classmates in the work group or Workshop Group (WG).

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	15.15
Self study	138,0	69.70
Hours small group	30,0	15.15

Total learning time: 198 h

CONTENTS

1. Existing Products and Improvements. Redesign of products.

Full-or-part-time: 3h
Theory classes: 3h

2. Analysis and Study based Developement. Duality in Products.

Full-or-part-time: 3h
Theory classes: 3h

3. Industrial Design Methodology. Design Process. Reverse Product Engineering.

Full-or-part-time: 3h
Theory classes: 3h

4. Fabrication and Production Tecniques. Avaluation.

Full-or-part-time: 3h
Theory classes: 3h

5. Presentation tecniques

Full-or-part-time: 3h
Theory classes: 3h

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Full-or-part-time: 15h
Practical classes: 15h

Design Workshop Laboratory

Full-or-part-time: 30h
Laboratory classes: 30h

Autonomous Learning

Full-or-part-time: 90h
Self study : 90h

GRADING SYSTEM

The assessments of the different Departments with their Specific Subjects that make up the TAD2 subject are linked to the percentages corresponding to the final grade of the subject:
BUSINESS ORGANIZATION -OE 20%
GRAPHIC AND DESIGN ENGINEERING -EG 20%
MECHANICAL ENGINEERING -EM 20%
ELASTICITY AND STRENGTH OF MATERIALS -RM 20%
MATERIALS SCIENCE AND ENGINEERING -CM 20%

The Departments that form part of the TAD2 subject will assess the different Parts defined by the Project developed by the Workshop Group and linked to the corresponding individual and group activities, mainly based on the following two sections:

NOTE A. Definition and content of the developed Project.
Existing Product Report (IPE) (50% of the final grade of the subject):
- Report / Report of the Product Analyzed by the GT 30%.
- Presentation and Technical Exhibition of the Project 20%.
- Specific Subject Developed by Department 50%.

Redesign or Innovation of the Analyzed Product (IPA) (50% of the final mark of the subject):
- 10% WG Project Report
- Presentation and Technical Exhibition of the Project 20%
- Specific Subject Develops 40%
- Definition of the Final Model of the GT 30%

EVALUATION B. Project Management and Monitoring.
- This section will assess the monitoring and good planning and management by the Workshop Group (WG) and the students who make it up. Not having an entrepreneurial attitude in Project Management can penalize the Grade A (Definition and Content of the Project) up to 20% less, considered from their individual activity, such as the group.

This assessment B affects the final grade of the Project and consequently the overall grade of the subject. The main indicator of this assessment, among others, is that established in the Rules and Guidelines for carrying out the Activities.

The individual activity developed in each specific subject by each student of the WG is the main basis for its evaluation, this activity is the projected on the project and other activities of the WG, thus obtaining the individual grade and the group.

Attendance at the Design Laboratory or Workshop 2 is a necessary condition for passing the course.
The reassessment according to the Academic Regulations of the Degree and Master studies of the EPSE VG, in this subject of Project base does not correspond to do it.

Regarding the operation, monitoring and evaluation and qualification system of the subject, what is established on the digital campus (Atenea) will always prevail.

EXAMINATION RULES.

It is mandatory to attend and actively participate in the Design Workshop and to have a respectful, critical and active attitude for the improvement of the results obtained, both on a personal and group level.
- In order to define the Activity and its content (Note A), and its Monitoring and Entrepreneurship (Assessment B) of each student (main indicator in the personal evaluation) as of the rest of the students of the Group of Workshop (WG) on each Project must do:
1) The Weekly Follow-up Report (AS).
2) The Global Monitoring Act (AG).
3) The Documentation developed with its structure and content corresponding to the defined Project will be made following the guidelines established in the document published in Atenea.

The Projects or Works will be delivered following the guidelines and format established in the Digital Campus (Atenea).

BIBLIOGRAPHY

Basic:
- Hudson, Jennifer. Proceso : 50 productos de diseño : del concepto a la fabricación. Barcelona: Blume, 2009. ISBN 9788498013832.
- Ashby, M. F.; Johnson, Kara. Materials and design : the art and science of material selection in product design [on line]. 2nd ed. Amsterdam [etc.]: Elsevier Butterworth Heinemann, 2010 [Consultation: 20/02/2024]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/9781856174978/materials-and-design. ISBN 9781856174978.
- Budynas, Richard G.; Nisbett, J. Keith. Diseño en ingeniería mecánica de Shigley [on line]. 10a ed. Ciudad de México: McGraw-Hill, 2018 [Consultation: 14/02/2024]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5485813. ISBN 9781456262112.

Complementary:
- Kalpakjian, Serope; Schmid, Steven R. Manufacturing engineering and technology. 8th ed. Harlow: Pearson Education Limited, 2023. ISBN 9781292422244.