Course guide
340084 - TAD3-D6O37 - Design Workshop III

Last modified: 17/05/2023

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

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

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

LECTURER

Coordinating lecturer: Departament 717-EGiD: Manuel Lopez Membrilla

Others: Departament 702-CEM: Joan Vicent Castell Balaguer, Isabel Espinosa Hernández, Sergi Menargues Muñoz.
Departament 712-EM: Marc Escolà Fernández.
Departament 717-EGiD: Manel L. Membrilla, Alba Torras,
Departament 732-OE:Josep Maria Colomer.
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 3 (TAD3), the last 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: Total Design Workshop.
- In the different Sessions of Workshop of Design 3 (TAD3) 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 TAD3, with practical applications and convenient examples to facilitate their understanding. Define the different parts that make up the Total Design.

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).

- The Practices or Design Workshop Project 3 are made up of:
1) Sessions where the activities of the WGs and the corresponding works will be defined on the basis of a single proposed Project.
2) Define the two phases to be developed of the proposed Project based on the evaluations scheduled by the center.
3) Complement with global or specific comments so that the students of the WG can develop the project proposed.
4) Guided and personalized follow-up to achieve a more efficient result for the student and the GT group in particular.
5) Define Product Design Specifications (EDPs): EDSs and EDCs.
6) The traceability of a Product in all its industrial and social areas: Industrialization, Manufacturing, marketing, logistics, user interaction, costs ... as the most relevant among others.
- The Design Workshop 3 will include:
1) Handling of existing products: disassembly and assembly of specific products or components.
2) Guided follow-up to achieve an optimal result in the WG in the two phases to be developed of the given Project.
3) Possibility to make the corresponding model. (prototypes in possible means and possible solutions).
4) Guided and personalized follow-up to achieve a more efficient result for the student and the GT group in particular.
- 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, the aforementioned result must also reflect, and no less important, the Management of the Project itself 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 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 aimed at carrying out the presentation of projects, as well as the search for complementary information, and the manipulation of existing products or components.

LEARNING OBJECTIVES OF THE SUBJECT

- Acquire more specific training on the Product and its components, as well as become familiar with the different parts that make it up. Comprehensive Product Analysis: structures and modules that define it.
- Define in this Design Workshop 3 the broader concept of Total Design and its development process.
- Enhance the skill, ingenuity and ability to analyze and manipulate industrial products of all kinds.
- Integrate into Product Engineering: the definition and traceability of a product in all its technical and social areas.
- To develop a technical capacity that allows to solve effectively the proposed projects and the ideas that they themselves generate contributing value to the solution.
- Design and Project the whole process of product development from the conceptual theoretical knowledge of the different subjects that make up the Design Workshop 3.
- Acquire a global and comprehensive vision of the product. Product and its components. Structure of a product.
- Apply important concepts such as: EcoDesign, Product Life Cycle (PLM) ... among others, within the global concept of circular economy.
- Define your own content in the definition and management of a Design or Product Engineering Project.
- Develop a critical and self-critical attitude towards one's own work and that of classmates.

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Hours small group	30,0	20.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

1. DESIGN AND DEVELOPMENT OF COMPLEX PRODUCTS. TOTAL DESIGN

Description:
content english

Full-or-part-time: 1h 40m
Theory classes: 1h 40m

(ENG) -2.ANALISI DE LA FORMA DEL PRODUCTE. INNOVACIO I ERGONOMIA.

Full-or-part-time: 1h 40m
Theory classes: 1h 40m

(ENG) -3.ANALISI DE LA COMPOSICIO DEL PRODUCTE. MATERIALS.

Full-or-part-time: 1h 40m
Theory classes: 1h 40m

(ENG) -4.ANALISI DE LA ESTRUCTURA DEL PRODUCTE. RESISTENCIA.

Full-or-part-time: 1h 40m
Theory classes: 1h 40m

(ENG) -5.ANALISI DELS COMPONENTS DEL PRODUCTE. MECANISMES.

Full-or-part-time: 1h 40m
Theory classes: 1h 40m

(ENG) -6.TECNIQUES DE PRODUCCIO I FABRICACIO II. AVALUACIO.

Full-or-part-time: 1h 40m
Theory classes: 1h 40m

(ENG) -PRACTIQUES DE TALLER DE DISSENY

Full-or-part-time: 10h
Practical classes: 10h

(ENG) -LABORATORI DE TALLER DE DISSENY

Full-or-part-time: 40h
Laboratory classes: 40h

(ENG) -APRENETATGE AUTONOM

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

GRADING SYSTEM

The assessments of the different Departments with their Specific Subjects that make up the TAD3 subject are linked to the percentages corresponding to the final grade of the subject:

BUSINESS ORGANIZATION -OE 10%
GRAPHIC AND DESIGN ENGINEERING -EGiD 10%
MECHANICAL ENGINEERING -EM 25%
ELASTICITY AND RESISTANCE OF MATERIALS -RM 25%
SCIENCE AND ENGINEERING OF MATERIALS -CEM 30%

The Departments that are part of the TAD3 subject will assess the different Parts that define the Project developed by the Workshop Group and linked to the corresponding individual and group Activities, based mainly on the following two sections:

NOTE A. Definition and content of the proposed Project.
Initial Phase: Conceptual Design of the Product of all Subjects (30% of the final grade of the Project):
- Initial Report of the Workshop Group Project 20%.
- Presentation Initial Phase of the Project 20%.
- Specific Subject Developed 30%.
- Initial Formal Volumetric Model 30%

Final Phase: Total Product Design, final definition of the Project (70% of the final grade of the Project):
- Global GT Project Report 10%
- Presentation and Technical Exhibition of the Project 20%
- Specific Matter Develops 30%
- Definition of the Final Model of the GT 40%

ASSESSMENT B. Project Management and Monitoring.
- In this section, monitoring and good planning and management by the Workshop Group (GT) and the students that form it will be valued. Not having an entrepreneurial attitude in Project Management can penalize Grade A (Definition and Content of the Project) up to 20% less, contemplated from their individual activity, as well 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 evaluation, among others, is the one established in the Norms and Guidelines for carrying out the activities.

The individual Activity developed for each Specific Subject by each GT student is the main basis for their evaluation, this activity is projected on the project and other GT activities, thus obtaining the individual and group grade.

Attendance at the Laboratory or Design Workshops is a necessary condition to pass the subject.
The reassessment according to the Academic Regulations of the Bachelor and Master studies of the EPSE VG, in this Project-based subject does not correspond to do it.

Regarding the operation, monitoring and evaluation and qualification system of the subject, what is established in 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), in the Project it is necessary to 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.
- Kalpakjian, Serope; Schmid, Steven R. Manufacturing engineering and technology. 8th ed. Harlow: Pearson Education Limited, 2023. ISBN 9781292422244.
- 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.