Last update: 28-05-2018

340082 - MEDI-D6O17 - Design Methodology

Coordinating unit: 340 - EPSEVG - Vilanova i la Geltrú School of Engineering

Teaching unit: 717 - EGE - Department of Engineering Presentation

Academic year: 2018

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

ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Joan Josep Aliau Pons

Others: Joan Josep Aliau Pons
José Maria Ibañez García

Prior skills

Know and identify:
The manufacturing process according to the geometry, material aspect of the workpiece.
Identify impossible geometries depending on the manufacturing process.
Teaming up with one common objective.
Knowing represent sketch or technical drawing that you want to understand.

Requirements

SOST - Sustainability ..... - 340001
EXGR - Graphic Expression ..... - 340024
DIRT - Design and Repres., Technical ... - 340075
TAD1 - Design Workshop I ..... - 340072
TAD2 - Design Workshop II ..... - 340076
PRFA - Manufacturing Processes ..... - 340095
DIGR - Graphic Design ..... - 340080
DIBA - Basic Design ..... - 304079

Degree competences to which the subject contributes

Specific:

1. D.27 Advanced MODELAJE in 3D knowledge.
2. D29. Knowledge of editing and technical documents representation.
3. D33. Knowledge of aesthetics.
4. D34. Knowledge of the historical evolution of products.
5. D35. Knowledge of technique evolution.
6. D37. Ability to recognize changes in society.
7. D38. Ability to identify the language of forms, its values and relation with cultural surroundings.

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8. D39. Ability to analyze repercussions generated by products in society.

9. D40. Ability to know and interpret the necessity of the market and user.

10. D41. Control of tools related to design processes.

11. D42. Knowledge of design tools to apply them in design and redesign projects.

12. D49. Ability to analyze and to synthesize bidimensional and tridimensional forms.

13. D50. Knowledge of basic fabrication processes to transform metals, POLIMEROS and ceramics.

14. D53. Ability to associate possibilities to design in each fabrication process.

15. D55. Ability to analyze components and products.

16. D57. Ability to redesign products.

17. D58. Practical knowledge of industrial design methodology.

18. D60. Practical knowledge of design and component and complex product development.

19. D61. Practical knowledge of product detail design.

20. D62. Practical ability to analyze form, composition and structure of products.

21. G5. Mastery of rendering techniques, spatial design, standardization, computer-aided design, knowledge of fundamentals of industrial design.

Transversal:

22. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
23. 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.
24. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
25. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
26. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.
27. 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.
28. 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.
29. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
30. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 2. Applying sustainability criteria and professional codes of conduct in the design and assessment of technological solutions.
31. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into

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account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

32. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.
33. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
34. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
35. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
36. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.

Teaching methodology

Introduction of each area of knowledge.
Justification and examples of practical application.
Class exercises consolidation of content.
Teamwork

Learning objectives of the subject

Know and apply the design process.
Apply tools related to the design process.
Identify design tools for application in projectes design and redesign of products.
Analyze the impact environmental designed products or design.
Teaming up with one common objective.
Being able to make decisions related to product design-redesign.

Study load

Total learning time: 150h	Hours large group:	45h	30.00%
	Hours medium group:	0h	0.00%
	Hours small group:	15h	10.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

- Systems of Analysis and Design Synthesis.

Learning time: 14h
Theory classes: 14h

Description:
Identify the user's perception according to the type of design, the utility, the functionality and the use, and by applying functional tables, analyzing the precedents and referents to establish the design Brífing.

Related activities:
From a practical example develop the concepts and knowledge acquired.

Specific objectives:
Establish the roadmap that the designer and / or engineer have to do to create and solve the new product.

- Tools Design Methodology.

Learning time: 30h
Theory classes: 30h

Description:
Enter the eines of:
- Ecodisseny
- QFD
- FMEA
- Value Analysis
- SMED
- Poka Yoke
- DFMA

Related activities:
Practical exercises and resolution of a product example applied to all the tools explained.

Specific objectives:
Apply the tools to optimize the design of the product to be developed with the maximum guarantee.

- Industrialization of Products.

Learning time: 15h
Laboratory classes: 15h

Description:
Apply the tools explained in a practical example to develop in a team.

Related activities:
Teamwork with advice during the practical classes.

Specific objectives:
Based on the concepts and knowledge acquired, develop a new product by applying the tools to improve its economic viability

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Qualification system

Reports development and technical report 65%
Defense and technical exhibition project 25%
Rating skills and attitudes 10%

Regulations for carrying out activities

Classroom attendance is required of students in at least 90% of the practical sessions and laboratory.
There will be a continuous assessment model.

Bibliography

Basic:

Montaña, Jordi. Cómo diseñar un producto. Madrid: Instituto de la Pequeña y Mediana Empresa Industrial, 1989. ISBN 9788486805104.

Montaña, Jordi. Desenvolupament de producte : la gestió del disseny. Barcelona: CIDEM, 2003.

Bürdek, Bernhard E. Diseño : historia, teoría y práctica del diseño industrial. Barcelona: Gustavo Gili, 1994. ISBN 9788425216190.

Maña, Jordi. Desarrollo de un diseño industrial cuatro ejemplos ilustrativos. Madrid: Instituto de la Pequeña y Mediana Empresa Industrial, 1990. ISBN 9788486805302.

Pibernat i Domènech, Oriol. El Diseño en la empresa : innovación, mercado, exportación, producto, envase, embalaje, comunicación, marca, imagen corporativa, rentabilidad, selección, contratación, gestión. Madrid: INFE, 1986. ISBN 8450529638.

Maldonado, Tomás. El Diseño industrial reconsiderado. 3a ed. Barcelona: Gustavo Gili, 1993. ISBN 9688872172.

Vitrac, Jean-Pierre; Gaté, Jean-Charles. La Estrategia de producto y diseño en el plan de marketing. Barcelona: Gestión 2000, 1994. ISBN 8480880376.

Pibernat i Domènech, Oriol. La gestión del diseño. Madrid: Instituto de la Pequeña y Mediana Empresa Industrial, 1989. ISBN 8486805074.

Iváñez Gimeno, José Mª. La Gestión del diseño en la empresa. Madrid [etc.]: McGraw Hill, 2000. ISBN 8448128362.

Montaña, Jordi. Marketing de nuevos productos. Barcelona: Editorial Hispano Europea, 1990. ISBN 9788425508646.

Diseinu kudeaketarako eskuliburua = Manual de gestión de diseño. Bilbao: DZ Industri Diseinurako Zentrua DZ Centro de Diseño Industrial, 1995. ISBN 8477521859.