Course guide
340053 - EXG2-M5O17 - Graphic Expression II

Last modified: 05/07/2023

Unit in charge: Vilanova i la Geltrú School of Engineering
Teaching unit: 717 - DEGD - Department of Engineering Graphics and Design.

Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).

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

LECTURER

Coordinating lecturer: DANIEL RODRÍGUEZ RODRÍGUEZ

Others: - DANIEL RODRÍGUEZ RODRÍGUEZ
- DANIEL ESPÍN AGÜERO

PRIOR SKILLS

Knowing the rules of Industrial Design in the following contents:
- Views, Cortes i Sections.
- Dimensioning.
- Interpretation i representation of sets.
- Notions of Tolerancies and Surface Finishes.
Read and interpret product/component technical specification sheets.

REQUIREMENTS

It is mandatory to have completed and passed EXGR.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. CE12. Knowledge of fundamental automatism and control methods.
2. CE13. Knowledge of theatrical basics of machines and mechanisms
3. CE15. Basic knowledge of production and fabrication systems.

Transversal:
4. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
5. 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.
6. 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.
7. 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.
8. ENTREPRENEURSHIP AND INNOVATION - Level 3. Using knowledge and strategic skills to set up and manage projects. Applying systemic solutions to complex problems. Devising and managing innovation in organizations.

TEACHING METHODOLOGY

Introduction of each area of knowledge.
Justification and examples of practical application.
Class exercises consolidation of content.
Autonomous exercises with CAD software.

LEARNING OBJECTIVES OF THE SUBJECT

Industrial components correctly represent to:
- To achieve the purpose for which it was designed.
- Manufacture and assemble it correctly.

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

Geometric Tolerances

Description:
- Identify the geometries that require geometric tolerance.
- Selection and spedification in f=(application, cost, funcionality).

Specific objectives:
Identify and assign the most appropriate geometric tolerances.

Related activities:
Exercises in theory/laboratory class and practical work.

Full-or-part-time: 8h
Theory classes: 4h
Self study : 4h

Surface Finishes

Description:
- Identify the surfaces that require specific surface finished
- Selection and spedification in f=(application, cost, funcionality).

Specific objectives:
Identify and assign the most appropriate surface finishes.

Related activities:
Exercises in theory/laboratory class and practical work.

Full-or-part-time: 8h
Theory classes: 4h
Self study : 4h

Dimensional Tolerances

Description:
- Identify the geometries that require dimensional tolerance.
- Selection and spedification in f=(application, cost, funcionality).

Specific objectives:
Identify and assign the most appropriate dimensional tolerances.

Related activities:
Exercises in theory/laboratory class and practical work.

Full-or-part-time: 8h
Theory classes: 4h
Self study : 4h

Design of components f = (Manufacturing Process)

Description:
- Design of machined parts (lathe, mill, CNC, ...).
- Design of aluminum injection parts.
- Design of thermoplastic injection parts.

Specific objectives:
Apply the knowledge acquired in the subject.

Related activities:
Practical exercises applying all the theoretical knowledge acquired in the subject.

Full-or-part-time: 36h
Theory classes: 18h
Self study : 18h

Laboratory exercices.

Description:
L1 Exercise:
Design of a product applying theoretical concepts acquired in theory.
L2 Exercise:
A product redesign in f=(manufacturing process)

Specific objectives:
Apply the knowledge acquired in the subject.

Related activities:
Expand knowledge of 3D design (Solidworks).

Full-or-part-time: 90h
Laboratory classes: 30h
Self study : 60h

GRADING SYSTEM

20% Partial Test
40% Final Exam
40% Laboratory exercises
There is not "reavaluació". Weekly avaluation is done with feedback of: the theory class exercises, small theory tests and the follow-up of the laboratory practices.

EXAMINATION RULES.

Be assessed individually each area of knowledge:
15% - Component design
15% - Representation (Views and Sections)
35% - Dimensions
30% - Tolerances (dimensionals and geometrics)
5% -- Surface Finishes
These percentages may vary depending on the exercise to be solved.

BIBLIOGRAPHY

Basic:
- Félez, Jesús. Dibujo industrial. 3a ed. Madrid: Síntesis, 1999. ISBN 8477383316.
- Auria Apilluelo, José M. Dibujo industrial : conjuntos y despieces. 2a ed. Madrid [etc.]: Paraninfo, 2005. ISBN 8497323904.
- Hernández Abad, Francisco. Ingeniería gráfica : introducción a la normalización. 3a ed. Terrassa: ETSEIAT Departamento de Expresión Gráfica en la Ingeniería, 2008. ISBN 8460946592.
- Rodríguez de Abajo, Francisco Javier. Normalización del dibujo industrial. San Sebastián: Donostiarra, 1993. ISBN 8470631810.

RESOURCES

Computer material:
- Solidworks. Resource