

## 25808 - Graphic expression II

### Información del Plan Docente

|                         |  |
|-------------------------|--|
| <b>Academic Year</b>    | 2017/18  |
| <b>Faculty / School</b> | 110 - Escuela de Ingeniería y Arquitectura   |
| <b>Degree</b>           | 271 - Bachelor's Degree in Industrial Design and Product Development Engineering<br>558 - Bachelor's Degree in Industrial Design and Product Development Engineering |
| <b>ECTS</b>             | 6.0  |
| <b>Year</b>             | ---  |
| <b>Semester</b>         | Indeterminate  |
| <b>Subject Type</b>     | Basic Education, Compulsory  |
| <b>Module</b>           | ---  |

### **1.General information**

#### **1.1.Introduction**

#### **1.2.Recommendations to take this course**

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

#### **BASIC COMPETENCES**

CB01. Students have demonstrated knowledge and understanding in a field of study that is part of the general secondary education curricular, and is typically at a level which, although it is supported by advanced textbooks, includes some aspects that involve knowledge of the forefront of their field of study.

CB02. Students can apply their knowledge to their work or vocation in a professional manner and have competences typically demonstrated through devising and defending arguments and solving problems within their field of study.

## **25808 - Graphic expression II**

CB03. Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include an important reflection on social, scientific or ethical issues.

CB04. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

CB05. Students have developed those skills needed to undertake further studies with a high degree of autonomy.

### **GENERAL COMPETENCES**

GC06. Ability to generate the necessary documentation for the proper transmission of ideas through graphics, reports and technical documents, models and prototypes, oral presentations in Spanish and other languages.

GC07. Ability to use and master techniques, skills, tools and techniques and communication and others specific of design engineering needed for design practice.

GC08. Ability to learn continuously, to develop autonomous learning strategies and to work in multidisciplinary groups with motivation and determination to achieve goals.

### **SPECIFIC COMPETENCES**

SC04. Capacity of spatial vision and knowledge of graphic representation techniques, both traditional methods of metric geometry and descriptive geometry, such as through applications of computer-aided design.

## **4.Assessment (1st and 2nd call)**

### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

## **5.Methodology, learning tasks, syllabus and resources**

### **5.1.Methodological overview**

The learning process is based on the understanding of the theoretical contents explained to the all group during a master class and after that they are applied to some exercises and projects. This learning based on the practice and the experimentation allows to assimilate the theoretical content.

In other, some contents are introduced progressively during the master class and subsequently during the class of problems, where the group is divided into two other smaller groups, some exercises are done by the students with the help of the lecturer to assimilate the theoretical contents. During the laboratory class some projects will be made contents of the theoretical class.

Eventually, the method used to evaluate, certificate and correct the acquired capabilities of the student is during the supervised practice sessions where some projects that students have previously made, will be analyzed evaluated and

## 25808 - Graphic expression II

corrected with them and it is possible to request the student to improve some aspects of the projects.

This methodology allows to teach the process to represent using graphic and technical tools using a practice method based on projects.

Finally with an exam there will be evaluated some acquired capabilities and knowledges, difficult to evaluate with projects

### 5.2.Learning tasks

The learning planned activities are: theoretical classes, classes of problems and exercises, laboratory classes and supervised practice sessions

During theoretical classes the theoretical contents are developed

During the classes of problems there will be made some exercises by the students and after that commented and corrected; the objective is the acquisition and assimilation of the capabilities and knowledge explained during the theoretical classed and apply them to a real problem.

The laboratory classes are used to make some parts of the signature project using the previously acquired knowledge

The supervised practice sessions are used to evaluate, correct and clear all the aspects of the signature project where appear weaknesses and mistakes and to solve questions about the application of the knowledges to the practice.

The activities will be distributed into:

30 h. of master class (theoretical) (30 classes)

10 h. of class of problems and exercises (10 classes)

20 h. of laboratory classes (6/7 3 hours sessions)

25 h. of own study

50 h. practical work

5 h. for exams and projects presentations

### 5.3.Syllabus

The signature is composed of these topics:

1. Standardization in technical drawing
2. Overall and individual drawings

## 25808 - Graphic expression II

3. Threated standard elements
4. Standard elements to provide Joint and security
5. Bearings and accessories
6. Gears
7. Roughness
8. Tolerances
9. Material designation
10. Springs
11. Plastic pieces
12. Welded assemblies
13. Metallic structures

### 5.4.Course planning and calendar

| Week       | Theoretical   | Laboratory   |
|------------|---|--|
| 1, 2 and 3 | Standardization in Technical Drawing                                      | Practice I: generation of templates and individual drawings.                               |
|            | Overall and individual drawings. Material designation                     |  |
|            | Threated standard elements  |  |
| 4 and 5    | Standard elements to provide Joint and security. Bearings and accessories | Practice II: generation of list of elements, overall drawings and marks                    |
|            | Gears   |  |
| 6 and 7    | Welded assemblies. Springs. Plastic pieces                                | Practice III: generator for shafts, threated joints and elements, keys, ribbed zones, etc. |
| 8 and 9    | Metallic structures   | Practice IV: welded assemblies and plastic pieces  |
| 10 and 11  | Toughness   | Practice V: metallic sheet pieces  |
| 12 and 13  | Tolerances  | Practice VI: metallic structures. Use of roughness and tolerances                          |
|            |   |  |

## 25808 - Graphic expression II

|           |            |  |
|-----------|------------|--|
| 14 and 15 | Tolerances |  |
|-----------|------------|--|

### Temporización y distribución de cargas

6 ECTS Credits: 150 hours / student

30 h. of master class (theoretical) (30 classes)

10 h. of class of problems and exercises (10 classes)

20 h. of laboratory classes (6/7 3 hours sessions)

25 h. of own study

50 h. practical work

5 h. for exams and projects presentations

### 5.5.Bibliography and recommended resources

BB Altemir Grasa, José María. Dibujo industrial / J.M. Altemir Grasa . Ed. revisada. [Zaragoza] : Copy Center, cop. 2006

BB Auria Apilluelo, José M.. Dibujo Industrial : conjuntos y despieces / José M. Auria Apilluelo, Pedro Ibáñez Carabantes, Pedro Ubieto Artur . - 2ª ed. Madrid : Thomson, D. L. 2005

BC Calvo Lanza, Manuel. Dibujo industrial : normalización / Manuel Calvo . - [1a. ed.] Zaragoza : Universidad, Secretariado de Publicaciones, 1991

BC Félez, Jesús. Dibujo industrial / Jesús Félez, Mª Luisa Martínez . - 3ª ed. rev., 1ª reimp. Madrid : Síntesis, 2002

BC Rodriguez de Abajo, F.Javier. Normalización del dibujo industrial / F.Javier Rodriguez de Abajo, Roberto Galarraga Astibia San Sebastián : Editorial Donostiarra, D.L. 1993