

25808 - Graphic expression II

Syllabus Information

Academic Year: 2020/21

Subject: 25808 - Graphic expression II

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 558 - Bachelor's Degree in Industrial Design and Product Development Engineering
271 - Bachelor's Degree in Industrial Design and Product Development Engineering

ECTS: 6.0

Year: 2

Semester: First semester

Subject Type: Compulsory

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.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.

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 COMPETENCIES

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.

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

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

Some contents are introduced progressively during the lectures 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 professor to assimilate the theoretical contents. Afterward, the practice sessions will be allocated to the acquisition of knowledge related to the generation through the informatic tools of diverse graphic documentation.

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

This methodology allows teaching 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 knowledge, difficult to evaluate with projects.

4.2.Learning tasks

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

During lectures, 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 class and apply them to a real problem.

The practice sessions will be used to acquire knowledge about the generation of technical graphic documentation through computerized tools.

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

4.3.Syllabus

The course will address the following topics:

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

4.4.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	
	Threatened standard elements	
4 and 5	Standard elements to provide Joint and security. Bearings and accessories	Practice II: generation of a list of elements, overall drawings, and marks
	Gears	
6 and 7	Welded assemblies. Springs. Plastic pieces	Practice III: generator for shafts, threaded 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
14 and 15	Tolerances	

Timing and distribution of loads

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

4.5.Bibliography and recommended resources