28908 - Graphic expression

Información del Plan Docente

Academic Year	2016/17
Academic center	201 - Escuela Politécnica Superior
Degree	437 - Degree in Rural and Agri-Food Engineering
ECTS	6.0
Course	1
Period	Second semester
Subject Type	Basic Education
Module	---

1.Basic info

1.1.Recommendations to take this course

- The subject has a basic character. Any student of first cycle of a scientific- technician degree will be able to pursue their contents with profit.

However, it is advisable to have knowledge of plane geometry and descriptive geometry (dihedral system). Also it is advisable to know the basics of Technical Drawing (systems of representation) and running a PC user level.

- There are notes on the subject in the EPS Reprographics and material available (theoretical issues, problems, solved exercises, tests other courses related topics, CAD manuals, etc.) in the Moodle UZ (https://moodle.unizar.es/).

1.2.Activities and key dates for the course

- classes: see website EPS: times

http://www.unizar.es/centros/eps/

- Controls (midterms): at the end of each unit

Final exams: see website EPS: http://www.unizar.es/centros/eps/

June

September

2.Initiation

2.1.Learning outcomes that define the subject

- To draw existing geometric relationships among basic elements (point, line, plane and polyhedron) in three dimensional space.
- To represent on a two-dimensional format a three-dimensional polyhedron.
- To perform and understand a technical level in which is embodied a real mechanical design.
- To represent in a two dimensional format topographical works.

2.2.Introduction

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Graphic Expression allows knowing the language, beyond languages, different backgrounds and different professions, will share all professionals related to engineering.

In all subjects to study, there will always be part of the technical and scientific information that is given in a graphic support.

To this we must be able to answer the following questions:

- How can represent a three-dimensional space on a two-dimensional format?
- What it's the grammar followed by the technical drawing language?
- What is the relationship with current computer technologies?
- How you can express actual manufacturing concepts and control in a company?
- What is the relationship with other technical scientific subjects?

3.Context and competences

3.1.Goals

The course aims that the student:

- Understands the versatility of technical drawing as global interdisciplinary language to convey information.
- Understand the usefulness and necessity of standardization as a means to structure and simplify the transmission of graphic information.
- Acquire the basic skills necessary to translate in a plane, on paper or computer format, a job or engineering project.
- Properly use the tools of technical drawing and acquiring the capacity to Sketching with the agility and precision necessary for the transmission of graphic information.
- Be able to point to different references to the technical contents studied.
- Develop the ability to work individually and in teams.

3.2.Context and meaning of the subject in the degree

The subject is taught in the second semester of the first year of the degree.

Knowledge of Graphic Expression is needed to study the contents of other scientific and technical subjects.

In purely scientific subjects is required to develop a spatial vision that allows understanding of certain concepts such as Euclidean space, vector analysis, molecular structure, etc.

In technical subjects, using the learned scientific concepts, the result of work should include an analysis and transfer of information that will necessarily include graphic contents.

3.3.Competences

- To study scientific- technical subjects which demanding a spatial vision and analysis of spaces and / or three-dimensional structures.
- To develop a technical drawing of a mechanical design
- To understand and to operate on a topographical map.
- Acquiring knowledge of spatial vision and graphic representation technique.
- To apply basic knowledge of technical drawing.

3.4.Importance of learning outcomes

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A professional engineering develops his work in a three-dimensional physical space, for which he needs a spatial vision that allows him to analyze the spatial framework which will develop their work.

Also, in a multidisciplinary and global environment, it is necessary to have a technical language that allows communication between different professionals.

Graphic Expression combines these skills, so it can be said to be the "language engineering".

4.Evaluation

The subject can be overcome in two non-exclusive ways:

- A system of continuous evaluation, conducted over the course of a series of controls specified content areas that cover the whole subject.
- By conducting a global test (two official calls) covering the whole subject.

The test shall consist of the following thematic contents:

- Metric and projective geometry: homologies
- Descriptive Geometry: dihedral system.
- Descriptive Geometry: topography applications.
- Perspectives.
- Standardization of industrial design.
- CAD tools.
- Search information (bibliography)

4.2 Evaluation criteria

In these tests will be considered:

- The student may use any appropriate information.
- The contents of the questions are known in advance, within a limited range.

To pass the subject is necessary to overcome all the exposed contents. The thematic contents are saved overcome in the same course, but not from one course to another.

Who on continuous evaluation has approved a specific content, will not have to examine it in the global test.

	Points	Score	weigh
Metric and projective geometry: homologies	10	1	10%
Descriptive Geometry: dihedral	10	2	20%

system			
Descriptive Geometry: topography applications	10	2	20%
Perspectives	10	1	10%
Standardization of industrial design	10	2	20%
CAD tools.	10	1	10%
Search information (bibliography)	10	1	10%
Total		10	1

All content must be overcome; there will be no trade-off among them. A thematic content is approved when obtained a score equal to or greater than 5. If one of the topics is suspended, the exam will be suspended in full.

5.Activities and resources

5.1.General methodological presentation

In each of the topics to work it is intended that students acquire not only basic knowledge but be able to search, analyse and structure the information needed to develop the theme.

For this, the teacher responsible for the course will present basic contents and guidelines by which will analyze and solve a number of problems and exercises, individually or in groups (not very numerous).

During the course a series of tests in which students individually solve the exercises will be conducted.

As part of the learning process, these exercises will be discussed individually with the teacher of the subject so that the student must assess the work of correction, prosecuting the results.

At all times the student's attitude toward learning is valued.

5.2.Learning activities

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Throughout the course contents theoretical and practical exercises on the following topics will be developed:

- CAD Systems
- Metric and projective geometry: homologies.
- Descriptive Geometry: dihedral system
- Descriptive Geometry: topography applications
- Perspectives
- Standardization of Industrial Drawing: representation of parts (views, sections, sketches).
- Search information (bibliography)
- Dimensional and geometric tolerances. Settings. Measurement uncertainty.

5.3.Program

Theory program

- CAD Systems (AutoCAD)
- Metric and projective geometry: homologies.
- Descriptive Geometry: dihedral system (classical and direct methods)
- Descriptive Geometry: topography applications (roads).
- Perspectives
- Standardization of Industrial Drawing: representation of parts (views, sections, sketches).
- Search information (bibliography)
- Dimensional and geometric tolerances. Settings. Measurement uncertainty.

Practice program

- CAD Systems (AutoCAD)
- Metric and projective geometry: homologies.
- Descriptive Geometry: dihedral system (classical and direct methods)
- Descriptive Geometry: topography applications (roads).
- Perspectives
- Standardization of Industrial Drawing: representation of parts (views, sections, sketches).
- Search information (bibliography)
- Dimensional and geometric tolerances. Settings. Measurement uncertainty.
- Search information (bibliography)

5.4.Planning and scheduling

Detailed schedule: https://moodle.unizar.es/

The subject is taught in the 2 nd semester with a total of 18 weeks (including non-school periods). The student workload is 150 hours (6 ECTS credits). Each credit represents a work of 10 contact hours and 15 non-contact hours. In the course is organized as follows:

Activity name	ECTS credits	contact hours	non-contact hours	Total
Interactive	2	20	30	50

classes. Individual study and work / group				
Exercises. Individual study and work / group	2	20	30	50
CAD systems. Individual study and work / group	1,5	15	22,5	37,5
Search information	0,5	5	7,5	12,5
	Total	60	90	150

5.5.Bibliography and recomended resources

Resources

Notes, statements, books or chapters of books needed for the study of the subject.

Drawing tools:

- Square and bevel, without bezel and ungraded. Compass
- Scalimeter: with E1:1, E 1:2, E 1:3, E 1:4, E 1.5 y E 1:2.5 scales
- Hard pencils (2H or 3H) and normal pencils (HB); gums.
- Blank sheets A3 and A3 graph paper.

There are notes on the subject in the EPS Reprographics and material available (theoretical issues, problems, solved exercises, tests other courses related topics, CAD manuals, etc.) in Moodle UZ.

https://moodle.unizar.es/

Bibliography

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See:

http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=28908&Codcentro=201

Basic bibliography / Further reading

In the Moodle UZ there are a collection of books available to students.

https://moodle.unizar.es/