



Universitat de Lleida

# DEGREE CURRICULUM

# **GRAPHIC EXPRESSION I**

Academic year 2014-15

## Subject's general information

<b>Subject name</b>	Graphic Expression I
<b>Code</b>	102106
<b>Semester</b>	1st semester.
<b>Typology</b>	Troncal
<b>ECTS credits</b>	9
<b>Theoretical credits</b>	0
<b>Practical credits</b>	0
<b>Office and hour of attention</b>	Appointments can be asked via e-mail.
<b>Department</b>	Informàtica i Enginyeria Industrial
<b>Modality</b>	Presencial
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.
<b>Language</b>	Catalan
<b>Degree</b>	Degree in Automation and Industrial Electronic Engineering Degree in Mechanical Engineering
<b>Office and hour of attention</b>	Appointments can be asked via e-mail.
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## Subject's extra information

This subject is given during the first semester in the first course.

## Learning objectives

See competences

## Competences

### University of Lleida strategic competences

- Master Information and Communication Technologies.

Goals:

- Acquire skills in using program computer-aided design.

### Degree-specific competences

- Have spatial awareness and knowledge of the techniques of graphic representation, the traditional methods of metric and descriptive geometry, and the application of computer assisted design.

Goals:

- Apply the descriptive geometry techniques.
- Apply the parallel orthographic projection representation techniques.
- Be able to visualize and interpret 3-dimensional physical elements.
- Be able to interpret and obtain parallel orthographic projection views of both simple and complex objects.
- Be able to interpret and represent mechanical object drawings and mechanical assemblies using UNE normative.
- Develop skill in handling conventional drawing instruments.
- Acquire skills in freehand sketching.

## Subject contents

The table of contents is structured as follows:

**THEMATIC BLOCK I:** Descriptive geometry

**THEMATIC BLOCK II:** Standardization. Industrial drawing

**THEMATIC BLOCK III:** Computer aided design (CAD)

**THEMATIC BLOCK I: Descriptive geometry**

[1.] Representation systems fundamentals

[2.] Multiview orthographic projections

[2.1.] Fundamentals

[2.2.] Point representation

[2.3.] Line representation

[2.4.] Plane representation

[2.5.] Intersections

[2.6.] Parallelism

[2.7.] Perpendicularity

[2.8.] Distances

[2.9.] Folding down planes

[2.10.] Plane changes

[2.11.] Rotations

## **THEMATIC BLOCK II: Standardization. Industrial drawing**

[3.] Introduction to the technical drawing

[3.1.] Technical drawing fundamentals

[3.2.] Standardization fundamentals. Types of drawings

[4.] Orthographic views

[4.1.] Projection systems

[4.2.] View selection

[5.] Dimensioning

[6.] Particular, auxiliary, local and partial views

[7.] Sectional views

[7.1.] Fundamentals

[7.2.] Sectional types

[8.] Screw and thread standard representation

## THEMATIC BLOCK III: Computer aided design (CAD)

- [9.] CAD fundamentals
- [10.] Starting AutoCAD
- [11.] Object construction
- [12.] Editing and organization
- [13.] Text and hatching
- [14.] Dimensioning
- [15.] Isometric drawings

## Methodology

The theoretical and practical classes are alternated so that the student can put into practice the theoretical aspects and be able to solve real problems.

## Development plan

### Contents course's schedule:

#### **Week 1:**

Block I: Descriptive geometry

#### **Week 2, 4, 5, 6, 7 i 8:**

Block I: Descriptive geometry

Bloc III: Computer aided design (CAD)

#### **Week 9:** Exam-1

#### **Week 10, 11, 12, 13, 14 i 15:**

Block II: Standardization. Industrial drawing

Block III: Computer aided design (CAD)

#### **Week 16 and 17:** Exam-2

#### **Week 19:** Recovery Exam (RE)

## Evaluation

The evaluation method consists of:

- **Exam-1:** The exam will evaluate contents of Block I, and it will be held during 9th week. This exam has a

percentage over the final mark of 35%.

- **Exam-2:** The exam will evaluate contents of Block II, and it will be held during 16th and 17th week. This exam has a percentage over the final mark of 45%.
- **CAD-1 and CAD-2:** To evaluate the block III, there will be two practical tests, CAD-1 and CAD-2, in the laboratory of CAD. These tests have a percentage over the final mark of 10% respectively.

The subject's final mark will be obtained as the sum of all percentages explained above, following the next mathematical expression:

$$\text{Final Mark} = 35\% \text{ Exam-1} + 45\% \text{ Exam-2} + 10\% \text{ CAD-1} + 10\% \text{ CAD-2}$$

The course will be overcome by obtaining a final mark equal or greater than 50%.

In the event that the final mark does not exceed 50%, the student may make a recovery exam, **RE**, corresponding to the contents of the block I and II, with a percentage over the final mark of 80%. This exam will take place during 19th week.

## Bibliography

### Basic bibliography

Félez, J., Martínez, M., Cabanellas, J., y Carretero, A. (1996). Fundamentos de Ingeniería Gráfica. Síntesis, Madrid.

Pérez, J. y Palacios, S. (1998). Expresión Gráfica en la Ingeniería. Introducción al Dibujo Industrial. Prentice Hall, Madrid.

Ramos, B. y García, E. (1999). Dibujo Técnico. AENOR, Madrid.

Rodríguez de Abajo, F. (1992). Geometría Descriptiva. Tomo I Sistema Diédrico. Donostiarra, San Sebastián.

### Recommended bibliography

AENOR (1999). Dibujo Técnico. Normas básicas. AENOR, Madrid.

Félez, J. y Martínez, M. (1998). Dibujo Industrial. Síntesis, Madrid.

Gonzalo, J. (2001). Dibujo Geométrico. Arquitectura-Ingeniería. Donostiarra, San Sebastián.

Leiceaga, X. (1994). Normas Básicas de Dibujo Técnico. AENOR, Madrid.

Rodríguez de Abajo, F. y Galarraga, R. (1993). Normalización del Dibujo Industrial. Donostiarra, San Sebastián.