



Universitat de Lleida

DEGREE CURRICULUM
GRAPHIC EXPRESSION I

Coordination: CABISCOL TEIXIDO, MARIA ALBA

Academic year 2019-20

Subject's general information

Subject name	GRAPHIC EXPRESSION I			
Code	102106			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Energy and Sustainability Engineering	1	COMMON	Attendance-based
	Bachelor's Degree in Automation and Industrial Electronic Engineering	1	COMMON	Attendance-based
	Not informed	1	COMMON	Attendance-based
	Bachelor's Degree in Mechanical Engineering	1	COMMON	Attendance-based
Course number of credits (ECTS)	9			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	3.6		5.4
	Number of groups	6		2
Coordination	CABISCOL TEIXIDO, MARIA ALBA			
Department	COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING			
Teaching load distribution between lectures and independent student work	1 ECTS = 10 hours of lectures + 15 hours of independent student work			
Important information on data processing	Consult this link for more information.			
Language	Catalan			
Office and hour of attention	Appointments can be asked via e-mail.			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CABISCOL TEIXIDO, MARIA ALBA	alba.cabiscolteixido@udl.cat	27	
SOL FELIP, SALVADOR	salvador.sol@udl.cat	5,4	

Subject's extra information

Continuous work is recommended in order to achieve the objectives of the course, as well, frequently visit the Virtual Campus because, information related to the subject will be announced and teaching materials will be provided. There are no prerequisites for this course.

Learning objectives

- 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.
- Acquire skills in using program computer-aided design.

Competences

University of Lleida strategic competences

- UdL3: Master Information and Communication Technologies.

Degree-specific competences

- GEEIA5/GEM5: 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.

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 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, hatching and dimensioning****15. Isometric drawings**

Methodology

The teaching methodology consists of:

- **Lecture class and problems:** These classes are held in large groups and consist of combined lectures with the aim of exposing theoretical aspects, with problems classes, in which problems are solved in order to consolidate the theoretical learning aspects.
- **Practices:** These classes are held in groups of smaller size in the CAD Lab. In this classes, the student can put into practice the theoretical aspects and be able to solve real problems using computer aided design tools (CAD).
- **Evaluation System:** The teaching methodology used in the evaluation system includes written tests and practical tests.

Development plan

Week	Methodology	Contents	Lecture Hours	Independent Student Work Hours
1	Lecture, problems and practices	Lesson 1: Representation systems fundamentals Lesson 2: Multiview orthographic projections. Section 2.1, 2.2 and 2.3 Practice CAD nº 1 (Lesson 9)	6	9
2	Lecture, problems and practices	Lesson 2: section 2.4 Practice CAD nº 2 (Lesson10)	6	9
3	Lecture, problems and practices	Lesson 2: section 2.5 i 2.6 Practice CAD nº 3 (Lesson 10)	6	9
4	Lecture, problems and practices	Lesson 2: section 2.6 i 2.7 Practice CAD nº 4 (Lesson 10)	6	9
5	Lecture, problems and practices	Lesson 2: section 2.7 i 2.8 Practice CAD nº 5 (Lesson 10)	6	9
6	Lecture, problems and practices	Lesson 2: section 2.9 Practice CAD nº 6 (Lesson 10)	6	9
7	Lecture, problems and practices	Lesson 2: section 2.9 i 2.10 Practice CAD nº 7 (Lesson 10 and 11)	6	9

8	Lecture, problems and practices	Lesson 2: section 2.11 Practice CAD nº 8 (Lesson 10, 11 and 12)	6	9
9	Written Test	Exams (Exam-1)		
10	Lecture, problems and practices	Lesson 3: Introduction to technical drawing. Practice CAD nº 9 (Lesson 10, 11 and 12)	6	9
11	Lecture, problems and practices	Lesson 4: Orthographic views Practice CAD nº 10 (Lesson 13 and 14)	6	9
12	Lecture, problems and practices Practical Test	Lesson 5: Dimensioning CAD Test-1 (CAD-1)	6	9
13	Lecture, problems and practices	Lesson 6: Particular, auxiliary, local and partial views Practice CAD nº 11	6	9
14	Lecture, problems and practices	Lesson 7: Sectional Views Practice CAD nº 12	6	9
15	Lecture, problems and practices Practical Test	Lesson 8: Screw and thread standard representation CAD Test-2 (CAD-2)	6	9
16	Written Test	Exams (Exam-2)		
17	Written Test	Exams (Exam-2)		
18		Tutorial Time		
19	Written Test	Recovery Activities (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:

Final Mark = 35% Exam-1 + 45% Exam-2 + 10% CAD-1 + 10% CAD-2, (the minimum grade for Exam-1 and Exam-2 is 2.5 to 10)

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. The contents evaluated in the recovery exam will be divided into two parts, Block I contents and Block II contents. The minimum grade to pass is 2.5 to 10 in each of the blocks.

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.