Universitat de Lleida

DEGREE CURRICULUM

GRAPHIC EXPRESSION I

Coordination: CABISCOL TEIXIDO, MARIA ALBA

Academic year 2023-24

GRAPHIC EXPRESSION I 2023-24

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 Automation and Industrial Electronic Engineering	1	COMMON/CORE	Attendance-based
Bachelor's Degree in Energy and Sustainability Engineering	1	COMMON/CORE	Attendance-based
Bachelor's Degree in Mechanical Engineering	1	COMMON/CORE	Attendance-based
Common branch in industrial engineering programs - Lleida	1	COMMON/CORE	Attendance-based
Double bachelor's degree: Degree in Mechanical Engineering and Degree in Energy and Sustainability Engineering	1	COMMON/CORE	Attendance-based
Programa Acadèmic de Recorregut Successiu - Enginyeries Industrials	1	COMMON/CORE	Attendance-based

Course number of credits (ECTS)	9

Type of activity, credits, and groups

Activity type	PRALAB	TEORIA
Number of credits	4.5	4.5
Number of groups	5	3

Coordination	CABISCOL TEIXIDO, MARIA ALBA
Department	INDUSTRIAL AND BUILDING ENGINEERING
Teaching load distribution between lectures and independent student work	1 ECTS = 10 hours of lectures + 15 hours of independent student work

GRAPHIC EXPRESSION I 2023-24

Important information on data processing	Consult this link for more information.
Language	Catalan

GRAPHIC EXPRESSION I 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CABISCOL TEIXIDO, MARIA ALBA	alba.cabiscolteixido@udl.cat	24	
SOL FELIP, SALVADOR	salvador.sol@udl.cat	12	

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

Cross-disciplinary competences

- UdL3: Mastering ICT's.

Degree-specific competences

- GEEIA5/GEM5/CG5: Capacity of spatial vision and knowledge of the techniques of graphic representation, either by traditional methods of metric geometry and descriptive geometry or by applications of computer-aided design.

GEEIA Degree competences

General

- EPS5: Capacity of abstraction and of critical, logical and mathmatical thinking.
- EPS8: Capacity of planning and organizing the personal work.

GEES Degree competences

Basic

- CB1: That students have demonstrated to possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply knowledge coming from the vanguard of his/her field of study.

General

- CG5: Have the capacity for spatial vision and knowledge of graphic representation techniques, both by traditional methods of metric geometry and descriptive geometry, as well as through computer-aided design applications.

Specific

- CE1: Have knowledge and skills to apply graphic engineering techniques.

Cross-disciplinary

- CT3: Acquire training in the use of new technologies and information and communication technologies.

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. Standaritzation 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 (AutoCAD)

9. CAD fundamentals

10. Starting AutoCAD

11. Object construction

12. Editing and organitzation

13. Text, hatching and dimensioning

14. Model space and paper space

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.

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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 (BLOCK III)	6	9
2	Lecture, problems and practices	Lesson 2: section 2.4 Practice CAD nº 2 (BLOCK III)	6	9
3	Lecture, problems and practices	Lesson 2: section 2.5 i 2.6 Practice CAD nº 3 (BLOCK III)	6	9
4	Lecture, problems and practices	Lesson 2: section 2.6 i 2.7 Practice CAD nº 4 (BLOCK III)	6	9
5	Lecture, problems and practices	Lesson 2: section 2.7 i 2.8 Practice CAD nº 5 (BLOCK III)	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 (BLOCK III)	6	9
8	Lecture, problems and practices	Lesson 2: section 2.11 Practice CAD nº 8 (BLOCK III)	6	9
9	Written Test	Exams **(Exam-1)**		
10	Lecture, problems and practices	Lesson 3: Introduction to technical drawing. Practice CAD nº 9 (BLOCK III)	6	9
11	Lecture, problems and practices	Lesson 4: Orthographic views Practice CAD nº 10 (BLOCK III)	6	9
12	Lecture, problems and practices Practical Test	Lesson 5: Dimensioning Practice CAD nº 11 (BLOCK III)	6	9
13	Lecture, problems and practices	Lesson 6: Particular, auxiliary, local and partial views Practice CAD nº 12 (BLOCK III)	6	9
14	Lecture, problems and practices Practical Test	Lesson 7: Sectional Views Practice CAD nº 13 (BLOCK III) CAD Test **(CAD)**	6	9
15	Lecture, problems and practices Practical Test	Lesson 8: Screw and thread standard representation Practice CAD nº 14 (BLOCK III) CAD Test **(CAD)**	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 percentatge 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 percentatge over the final mark of 45%.
- **CAD**: To evaluate the block III, there will a practical test, **CAD**, in the laboratory of CAD. These tests have a percentage over the final mark of 20% 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 + 20% CAD-1, (the minimum grade for Exam-1 and Exam-2 is 2 to 10)

  The course will be overcome by obtaining a final mark equal or greater than 5.

In the event that the final mark is not equal or greater than 5, 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 to 10 in each of the blocks.

Alternative Assessment:

The alternative evaluation will consist of a single test corresponding to the contents of Block I and II with a percentage of 80% of the final grade. The final mark will be determined by that 80% and the remaining 20% will be the practical mark corresponding to block III (CAD exam to be carried out at the time established by the assigned laboratory group).
In the case of those students who, having taken advantage of the alternative evaluation, do not pass it, they will also have the possibility of recovering it. The part that can be recovered will be that corresponding to Block I and II with a percentage of 80%, the remaining 20% being the note corresponding to Block III (CAD exam).

Bibliography

Basic bibliography

Course notes.

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

Pérez,J. y Palacios, S. (1998). ExpresiónGráfica en la Ingeniería. Introducción al Dibujo Industrial. PrenticeHall, Madrid.

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

Rodríguezde 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.