Course guide

330505 - EG1 - Graphic Expression 1

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.
Degree: BACHELOR’S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2017). (Compulsory subject).
Academic year: 2023  ECTS Credits: 4.5  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Lopez Martinez, Joan Antoni

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE5. Spatial vision capacity and knowledge of graphic representation techniques, both by traditional methods of metric geometry and descriptive geometry, and by computer aided design applications.

Generical:
CG3. Knowledge of basic and technological subjects that will enable students to learn new methods and theories and that will endow them with the versatility needed to adapt to new situations.

Transversal:
1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.
2. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

Basic:
CB1. Students will be able to demonstrate their knowledge of a field of study that builds on secondary education and is usually found at a level that, while supported by advanced textbooks, also includes aspects that involve knowledge of the latest developments in the field of study.
CB2. Students will be able to apply their knowledge to their work or vocation in a professional manner and demonstrate that they possess the competencies that are typically demonstrated by elaborating and defending arguments and solving problems in the field of study.

TEACHING METHODOLOGY

MD1 Master class or lecture (EXP)
MD2 Problem solving and case study (RP)
MD4 Directed theoretical and practical work (TD)
MD5 Small-scale project, activity or assignment (PR)
MD7 Assessment activities (EV)

LEARNING OBJECTIVES OF THE SUBJECT

OAG1. Facilitate and improve the capacity for abstraction.
OAG2. Develop and exercise spatial imagination.
OAG3. Introduce concepts, techniques and methodologies in the area of graphic expression in industrial engineering.
OAG4. Use and understand the graphics language typical of industry.
**STUDY LOAD**

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>67.5</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>45.0</td>
<td>40.00</td>
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</table>

**Total learning time:** 112.5 h

**CONTENTS**

**Industrial standardisation**

**Description:**
- Freehand technical drawing.
- Obtaining standardised views.
- Treatments: cutaways and sections.
- Guidelines for industrial dimensioning.
- Screw threads and other standardised items.
- Graphic representation of industrial assemblies.

**Specific objectives:**
- OAG1, OAG3, OAG4

**Related activities:**
- CRO1, CRO2, PRA

**Full-or-part-time:** 18h
- Practical classes: 6h
- Self study: 12h

**Geometry and wireframe**

**Description:**
- Geometric locus.
- Projections and representation systems: basic operational techniques.
- Points, lines and planes. Relative positions.
- Conditions of perpendicularity, parallelism and convergence.
- Distances.
- Angles

**Specific objectives:**
- OAG1, OAG2

**Related activities:**
- PRA

**Full-or-part-time:** 9h
- Practical classes: 3h
- Self study: 6h
Surfaces

Description:
Generatrices and directive planes
Surface types and samples
Standard sheet metal elements
Developed views

Specific objectives:
OAG2, OAG4

Related activities:
PRA, PRO

Full-or-part-time: 7h 30m
Practical classes: 2h 30m
Self study: 5h

ACTIVITIES

Classroom sketching (CR01)

Description:
Understanding axonometric views.
First angle projection representation.
Using drawing and representation tools.
Result evaluation.

Specific objectives:
OAG1, OAG2, OAG3 y OAG4

Material:
Basic drawing/sketching tools

Delivery:
Paper.

Full-or-part-time: 3h 30m
Theory classes: 3h 30m
Sketching and independent study (CRO2)

**Description:**
Understanding axonometric views.
First angle projection representation.
Using drawing and representation tools.
Result evaluation.

**Specific objectives:**
OAG1, OAG2, OAG3 i OAG4

**Material:**
Basic drawing/sketching tools.

**Delivery:**
Paper.

**Full-or-part-time:** 15h
Self study: 15h

CAD activities (PRA)

**Description:**
Representing objects, parts, assemblies and subassemblies with CAD tools.
Obtaining drafts with all the necessary indications and symbols for a perfect understanding of parts and assemblies.

**Specific objectives:**
OAG2, OAG3 i OAG4

**Material:**
PC, basic drawing and measuring tools.

**Delivery:**
Atenea.

**Full-or-part-time:** 38h 30m
Practical classes: 18h
Self study: 20h 30m
CAD design projects (PRO)

Description:
Idea and approach.
Planning.
Sketching and calculation.
Parts and drafting.
Integration and assembly draft.
Oral presentation.

Specific objectives:
OAG2, OAG3 i OAG4

Material:
PC, basic drawing and measuring tools.

Delivery:
Atenea.

Full-or-part-time: 21h
Practical classes: 12h
Self study: 9h

GRADING SYSTEM

The mark is obtained by continuous assessment of the students' work.
- Individual theory activities: 9%
- Self-learning activities: 9%
- Individual CAD activities: 16%
- CAD assembly: 10%
- CAD project: 14%
- Individual standardisation test: 24%
- Individual special geometry and surfaces test: 18%

EXAMINATION RULES.

The practical exercises carried out on the computer will be sent using the platform Atenea in the state in which they are at the end of the class. They must be delivered the following week on paper or in the form indicated by the professor.

Handwritten practical exercises will be done on a sheet with a specific format. Some exercises will require the use of traditional tools, such as set squares, triangles, compasses and protractors.

Other previous generic skills and/or qualities applicable to any academic activity at the university are also required, including a spirit of sacrifice, neatness, capacity for synthesis, teamwork, respect for companions and the professor, and constancy.

BIBLIOGRAPHY

Basic:
Complementary: