Course guide
330058 - EG - Graphic Expression

Last modified: 25/04/2024

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.

Degree: BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN ICT SYSTEMS ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2016). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2016). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2016). (Compulsory subject).
BACHELOR'S DEGREE IN MINERAL RESOURCE ENGINEERING AND MINERAL RECYCLING (Syllabus 2021). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Carbonell Mañe, Montserrat

Others: Bastardas Bonachi, Francesc Xavier
Pregonas Sarrà, Jaume
Villar Ribera, Alberto

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Capacity of spatial vision and connection of the techniques of graphic representation, both by traditional methods of metric geometry and descriptive geometry, with mitigation of design applications and assistit per computer.

Transversal:
2. 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.
3. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
4. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

The student, at the end of the course, must be able to:
1. Know and put into practice the graphic language of representation systems in engineering.
2. Know and put into practice applications of graphic expression and computer-assisted drawing.
3. Demonstrate manual dexterity in sketching and sketching.
4. Interpret industrial plans.
5. Present the work done.
6. Know and put into practice the dynamics of teamwork.

STUDY LOAD

Type	Hours	Percentage
Hours large group	15,0	10.00
Hours small group	45,0	30.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

Topic 0. Introduction.

Description:
1. CAD tools.
2. Generation of three-dimensional models.
3. Work on the plane and in space.

Specific objectives:
1. Introduce the CAD tool, which the student will use throughout the course.

Related activities:
Master class on basic concepts, procedures and guidelines on the subject. Individual practice where the knowledge presented is applied.

Full-or-part-time: 9h
Laboratory classes: 3h
Self study : 6h

Unit 1. Plane geometry.

Description:
1. The method of geometric places. Application to solving problems on the plane.
2. Extension of the method to space.

Specific objectives:
1. Train the student in solving geometry problems.

Related activities:
Master class on basic concepts, procedures and guidelines on the subject. Individual practice where the knowledge presented is applied.

Full-or-part-time: 20h
Theory classes: 2h
Laboratory classes: 3h
Self study : 15h

Unit 2. Geometry in space.

Description:
1. Representation systems.
2. Axanometric system.
3. Dihedral system.
4. Geometric primitives: point, line and plane.
5. Relative positions.
6. Movements (Turn, Drop, Change of plane).
7. Distances and angles.
8. Volumes and Surfaces.

Specific objectives:
1. Give the basic knowledge to be able to use the representation system.

Related activities:
Master class on basic concepts, procedures and guidelines on the subject. Individual practices where the knowledge presented is applied.

Full-or-part-time: 64h
Theory classes: 13h
Laboratory classes: 6h
Self study : 45h

Topic 3. Industrial Standardization.

Description:
1. Generalities.
2. Views.
3. Courts. Sections. Details.
4. Dimensioning.
5. Assembly drawing.

Specific objectives:
1. Give the necessary elements to be able to represent industrial elements.

Related activities:
Master class on basic concepts, procedures and guidelines on the subject. Individual practices where the knowledge presented is applied. Group project.

Full-or-part-time: 57h
Laboratory classes: 33h
Self study : 24h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Hernández Abad, Francisco; Hernández Abad, Vicente; Ochoa Vives, Manuel. Lugares geométricos: su aplicación a tangencias. Barcelona: Edicions UPC, 1993. ISBN 8476532814.
- Comasòlivas Font, Ramon. Sistema diédrico [on line]. Barcelona: Edicions UPC, 1997 [Consultation: 12/11/2020]. Available on: http://hdl.handle.net/2099.3/36272. ISBN 848963141.
- Hernández Abad, Francisco, i altres. Ingeniería gráfica: introducción a la normalización. 2ª ed. Terrassa: ETSEIAT. Departamento de Expresión Gráfica en la Ingeniería, 2006.

Complementary:

- González García, Victorino. Sistemas de representación. Vol. 1, Sistema diédrico. Valladolid: Texgraf, 1977. ISBN 8440023316.
- Ramos Barbero, Basilio; García Maté, Esteban. Dibujo técnico [on line]. 3ª ed. Madrid: AENOR, 2016 [Consultation: 08/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=8888. ISBN 8481439185.