COURSE: GRAPHIC EXPRESSION

SUBJECT MATTER: Graphic Expression
MODULE: Basic Formation
PROGRAM: Degree in Chemical Engineering

GENERAL CHARACTERISTICS
- Type: ☑ Basic Formation, ☐ Compulsory, ☐ Elective
- ☐ Final Degree Project, ☐ Internship
- Duration: Semestral, Semester/s: 3
- Number of ECTS credits: 6
- Language/s: Spanish, Catalan

DESCRIPTION

SHORT DESCRIPTION AND JUSTIFICATION

It is an eminently practical subject that will provide the necessary tools so that the future graduated or graduated in Chemical Engineering can project and interpret technical diagrams used in the chemical industry and solve the graphic problems that arise in the exercise of their activity. The objectives of the subject are to transmit to the students those concepts that allow them to understand the principles and techniques of the most common graphic expression, of geometric constructions and representation systems, to initiate students in the use of computer tools for industrial drawing design through computer-aided design (DAO / CAD) and transmit knowledge of regulations and applications of technical drawing in industrial environments.

COMPETENCES

- Be able to understand and apply basic knowledge of Graphic Expression for application in the field of Chemical Engineering. (→CB1, E1)
- Be able to identify, formulate and solve basic problems in Graphic Expression and problems in the fields of Chemical Engineering and Chemistry. (→CB2, E7).
- That students are able to convey information, ideas, problems and solutions to both specialized and non-specialized audiences. (→CB4)
- Spatial vision capability and knowledge of graphical representation techniques, both through traditional methods of metric geometry and descriptive geometry, and through computer-aided design applications. (→BF5)

PREREQUISITES

According to the program planning and academic regulations.
CONTENTS

BLOCK 1: Introduction to Industrial Drawing
  1. Standardization and Technical Drawing
  2. Drawing sketches
  3. Application of representation systems: Plants, elevations, sections, threads and other details
  4. Drawing perspectives
  5. Dimensioning

BLOCK 2: Diagrams and Plans in the Chemical Industry
  1. Block Flow Diagrams (BFD)
  2. Process Flow Diagrams (PFD)
  3. Piping and Instrumentation Diagrams (P&ID)
  4. Designation and representation of equipment.
  5. Pipe Handbooks
  6. Designation and representation of measurement and control instruments
  7. Implementation plans
  8. Other plans

BLOCK 3: Computer-aided Drawing (CAD)
  1. Introduction to AutoCAD
  2. Visualization methods
  3. Entity drawing
  4. Edition of objects and properties of objects
  5. Creation and management of layers
  6. Model space and Paper space
  7. Creation of Blocks and attributes
  8. Dimensioning
  9. Printing documents
LEARNING ACTIVITIES

<table>
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<th>Learning Activities</th>
<th>Hours</th>
<th>ECTS Credits</th>
<th>Competences</th>
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<td>Lectures</td>
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<td>0.7</td>
<td>CB1, E1, FB5</td>
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<td>Case and Problem-Solving Sessions</td>
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<td>Personal study</td>
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ASSESSMENT

ASSESSMENT METHODS

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<th>Weight</th>
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<td>Midterm Exam/s</td>
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<td>Follow-up Activities</td>
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<td>Lab or Field Work</td>
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<td>Projects</td>
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<td>Participation</td>
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LEARNING OUTCOMES

- The student must demonstrate the ability to understand and apply the basic knowledge of graphic expression, necessary for the practice of chemistry and engineering. (→CB1, E1, FB5).
- The student must demonstrate the ability to communicate effectively, graphically, to transmit knowledge, skills and abilities in the field of chemistry and engineering. (→CB4).
- The student must demonstrate ability of spatial vision and knowledge of graphic representation techniques, both by traditional methods of metric geometry and descriptive geometry, and by computer-aided design applications. (→CB2, E7, FB5).

QUALIFICATION

PR: Project (15% Final Mark). Teamworking to construct an Engineering Diagram.
CA: Continuous Assessment Activities (15% Final Mark). Exercises related with the topics of the course.
ME: Midterm Exams (30% Final Mark). Control exams to evaluate the knowledge of the course.
FE: Final Exam (40% Final Mark). The final mark of the exam must be higher than 4.

The final qualification (FQ) will be calculated as follows:
FQ = 0.15*PR + 0.15*CA + 0.30*ME + 0.40*FE.

The no presentation of some of these items will lead to lose the right for the final exam.
ASSESSMENT OF THE COMPETENCES

For the evaluation of each competence, the next indicators will be used:
- Competence CB1: FE + ME
- Competence E1: FE + ME
- Competence FB5: FE + ME + CA
- Competence CB2: FE + ME + CA + PR
- Competence E7: FE + ME + CA + PR
- Competence CB4: PR

BIBLIOGRAPHY

- RODRIGUEZ DE ABAJO, FJ Curso de Dibujo geométrico y de croquización

DOCUMENT HISTORY

PREVIOUS REVISIONS
September 5, 2017, Dr. Rafael González Olmos
September 5, 2016, Dr. Rafael González Olmos

CURRENT REVISION
February 20, 2019, Damià Palmer Comas