



PERSONA CIÈNCIA EMPRESA
UNIVERSITAT RAMON LLULL

COURSE: DESIGN AND PROJECT OF INDUSTRIAL FACILITIES

SUBJECT MATTER: Process Technology

MODULE: Core Topics of Industrial Engineering

PROGRAM: Degree in Chemical Engineering

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GENERAL CHARACTERISTICS

Type: Basic Formation, Compulsory, Elective

Final Degree Project, Internship

Duration: Semestral

Semester / s: 7

Number of ECTS credits: 5

Language / s: Spanish

DESCRIPTION

SHORT DESCRIPTION AND JUSTIFICATION

This Chemical Engineering degree course explains how an industrial facility project arises from a need for a chemical product. It explains the entire life of the Project, from the idea of the need for investment, the preparation of the offer, the development of conceptual engineering, basic engineering, detail engineering, purchasing, contracting, construction and commissioning.

The subject is covered from the vision of the Project management of an engineering company and therefore has a strong component of Project management and coordination with the different actors: client, suppliers, contractors and coordination of disciplines or specialties of engineering and project planning.

The subject allows to understand how the different subjects of the degree are intertwined to allow the chemical engineer to carry out the process engineering of an industrial installation in the chemical, oil and gas industry and/or to be able to coordinate an interdisciplinary project formed by industrial engineers of several specialties.

In the course practical cases are developed with material and documentation of real projects.

COMPETENCES

- To be able to understand and apply knowledge of Chemistry and Engineering for its application in the field of Chemical Engineering. (CB1, E2)
- Be able to identify, formulate and solve problems in the fields of Chemical Engineering and Chemistry. (CB2, E7)
- Be able to analyze, integrate and interpret data and information from the field of Chemical Engineering. (CB3, E8).
- To be able to assess the risks in the use of chemical and biological substances and the processes in which they are involved. (E11).
- Be able to assess the impact of their professional activity on the sustainable development of society. (T3)
- Basic knowledge of production and manufacturing systems. (CRI9)
- Applied knowledge of company organization. (CRI11)



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- Knowledge and skills to organize and manage projects. Know the organizational structure and functions of a project office. (CRI12)

PREREQUISITES

According to current academic teaching planning and regulations.

CONTENTS

1. Concept of project engineering and process plants.
2. Project organization and documentation.
3. Project management.
4. Preparation of the offer.
5. Estimation of the investment.
6. Project Planning.
7. Basic engineering.
8. Selection and specification of equipment.
9. Industrial urbanism. Implantation of the industrial plant.
10. Legal aspects of the industrial project.
11. Design regulations and standards.
12. Detail Engineering
13. Purchasing and subcontracting
14. Construction and commissioning

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METHODOLOGY

LEARNING ACTIVITIES *

Learning activities	Hours	ECTS Credits	Competences
Lectures	32	1.2	CB1, E2, CB2, E7, CB3, E8, T3, E11, CRI9, CRI11, CRI12
Case and Problem-Solving Sessions	5	0.2	CB1, E2, CB2, E7, CB3, E8, CRI9, CRI11, CRI12
Seminars	4	0.2	CB1, E2, CB2, E7, CB3, E8, T3, E11, CRI9, CRI11, CRI12
Practical & Lab Work	14	0.5	CB1, E2, CB3, E8, T3, E11, CRI9, CRI11, CRI12
Presentations	3	0.1	CB1, E2, CB2, E7, T3, E11, CRI9, CRI11, CRI12
Personal study	70	2.5	CB1, E2, CB2, E7, CB3, E8, T3, E11, CRI9, CRI11, CRI12
Assessment Tasks (Exams, Continuous Assessment...)	7	0.3	CB1, E2, CB2, E7, CB3, E8, T3, E11, CRI9, CRI11, CRI12
TOTAL	135	5.0	

TEACHING METHODOLOGY

The didactic methodology of the course is based on combining an expository dynamic, the professor presents the fundamental content; with an active dynamic based on the reading and analysis of information, team work during the class from the information given by the professor and exposition on the part of the student as well as writing a report. This encourages active participation of the student, teamwork, coordination and leadership.

Theoretical classes are given by a professor who follows the common thread of the subject with interventions in some classes of specialists in a specific area of engineering.

The didactic methodology of the subject is based on the availability of real documents of engineering projects in the field of chemistry, refining, petrochemistry and gas, and portable computers by the students. For the student's personal study, the documents corresponding to the face-to-face sessions and bibliographic resources are provided.

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ASSESSMENT

ASSESSMENT METHODS

Assessment Methods	Weight (%)	Competences
Final Exam	40	CB1, E2, CB2, E7, T3, E11, CRI9, CRI11, CRI12
Midterm Exam/s		
Follow-up Activities	20	CB1, E2, CB2, E7, E11, CRI9, CRI11, CRI12
Reports and Presentations	35	CB1, E2, CB2, E7, CB3, E8, E11, CRI9, CRI11, CRI12
Lab or Field Work		
Projects		
Host Student Evaluation		
Participation	5	CB3, E8, T3

LEARNING OUTCOMES

- The student will be familiar with the general aspects of a chemical engineering project: he/she will be able to identify the type of project and know the different phases of it.
- The student will be familiar with the documentation that is managed during the development of a project, from project management documentation to technical documentation.
- The student will be able to interpret and distinguish between different types of documents and plans.
- The student will be able to recognize the relationships between the different disciplines involved in a detail engineering project.

QUALIFICATION

The evaluation of the course will consider the grades of the Reports and Presentations (TP), Participation (P), Follow-up Activities (AS) and the final exam (EF).

All grades will be expressed on a scale of 0 to 10. The final grade will be the weighted average of all activities: $0.40 \text{ EF} + 0.20 \text{ AS} + 0.35 \text{ TP} + 0.05 \text{ P}$.



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ASSESSMENT OF THE COMPETENCES

The evaluation of each competence is obtained:

- CB1/E2: the final grade of the subject.
- CB2/E7: the final grade of the subject.
- CB3/E8: the grade of papers and presentations.
- E11: the final mark of the subject.
- T3: the exam grade.
- CR19: the final grade of the subject.
- CR111: the final grade of the subject.
- CR112: the final grade of the subject.

BIBLIOGRAPHY

- The Oil & Gas Engineering Guide – Hervé Baron – Editions Technip (2010)

DOCUMENT HISTORY

PREVIOUS REVISIONS

September 19, 2013, Prof. Magali Gros y Dr. Julià Sempere

CURRENT REVISION

March 30, 2019, Prof. Magali Gros y Dr. José Javier Molins