

## COURSE GUIDE

2021/22

**Faculty** 215 - Faculty of Chemistry

**Cycle** Not Applicable

**Degree** GQUIMI20 - Bachelor's Degree in Chemistry

**Year** Fourth year

## COURSE

26131 - Projects in Industrial Chemistry

**Credits, ECTS:** 6

## COURSE DESCRIPTION

This subject is an introduction to the Chemical Industry and presents the concepts and tools employed in this sector to the student. The content includes a description of the steps for the design, management and development of chemical engineering industrial projects and a survey of the chemical industry. Finally, an introduction to the principles of chemical process safety is given.

## COMPETENCIES/LEARNING RESULTS FOR THE SUBJECT

The competences the student must acquire are:

M02CM07- Possess the ability to apply the basic principles of chemistry to industrial chemical operations and carry out chemical installation projects.

M02CM09- Be able to make verbal and written presentations of phenomena and processes related to chemistry and similar subjects in a comprehensible way.

M02CM10- Be able to search for and select information in the field of chemistry and other sciences through the use of the literature and information technologies.

M02CM11- Be able to relate chemistry with other disciplines and understand its impact on today's society and the importance of the industrial chemical sector.

The Grade Coordination Commission will guarantee the coordination of this and other subjects within the Grade in Chemistry.

## CONTENIDOS TEÓRICO-PRÁCTICOS

The Chemical Project: Structure and organization. Scope of a project. Chemical process design, economics and engineering. Environmental impact. Chemical plants operation.

The Chemical Industry: Inorganic compounds. Oil refining. Organic commodities and their derivatives. Sectors in the chemical industry: Polymers, coatings, agrochemicals, fertilizers, drugs&#8230;

Chemical Process Safety: Accidents, Toxicology, Fire and Explosions.

## TEACHING METHODS

The subject combines on-site classes with seminars where the student must solve and discuss problems and perform the several tasks proposed during the course.

## TYPES OF TEACHING

Types of teaching	M	S	GA	GL	GO	GCL	TA	TI	GCA
Hours of face-to-face teaching	45	5	10						
Horas de Actividad No Presencial del Alumno/a	67,5	7,5	15						

**Legend:** M: Lecture-based S: Seminar GA: Applied classroom-based groups  
 GL: Applied laboratory-based groups GO: Applied computer-based groups GCL: Applied clinical-based groups  
 TA: Workshop TI: Industrial workshop GCA: Applied fieldwork groups

## Evaluation methods

- Continuous evaluation
- End-of-course evaluation

## Evaluation tools and percentages of final mark

- Written test, open questions 55%
- Exercises, cases or problem sets 45%

## ORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

The subject will be evaluated through written exams (55%) and assignments (45%).

The written exams, in which the skills M02CM07 and M02CM011 will be assessed, will be divided into a midterm exam and a final exam. They will be written tests related to the concepts developed in the whole of the subject. The midterm exam will take place at the end of the first semester and passing it will mean the elimination of the corresponding subject for the final exam. To be able to take an average between the partial exams, you must obtain at least 4 in the final exam.

The work carried out during the course will be evaluated through written controls or online questionnaires, evaluating the competencies M02CM09, M02CM10 and M02CM11. In the case of online questionnaires, the subject being evaluated may be released from the final exam if a score higher than 7 is achieved in them.

Students have the right to be evaluated through the final evaluation system (single test), regardless of whether or not they have participated in the continuous assessment system. To do this, students must submit, within a period of 9 weeks from the beginning of the course, a letter to the teacher responsible for the subject, declining the continuous assessment.

It will be enough for the student not to take the exam to be evaluated as "not presented".

#### **EXTRAORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT**

Written exam: 100%

It will be enough for the student not to take the exam to be evaluated as "not presented".

#### **MANDATORY MATERIALS**

Se indicará cada curso en la Guía Docente.

#### **BIBLIOGRAFÍA**

##### **Basic bibliography**

"Diseño en Ingeniería Química", Ray Sinnott, Gavin Towler, Ed. Reverté , Barcelona (2012)

"Metodologías de diseño aplicado y gestión de proyectos para ingenieros químicos", Luis Cabra, Antonio de Lucas, Fernando Ruiz, M<sup>a</sup> Jesús Ramos, Colección Ciencia y Técnica, 58, Ediciones de la Universidad de Castilla-La Mancha, Cuenca (2010).

"El pronóstico económico en Química Industrial" A. Vian, Alhambra, Madrid (1990)

"Survey of Industrial Chemistry" 3<sup>a</sup> edición, Philip J. Chenier, Kluwer Academic/Plenum Publishers, New York (2002)

"Chemical Process Safety: Fundamentals with Applications" 2<sup>a</sup> edición, Daniel A. Crowl, Joseph F. Louvar, Prentice Hall, New Jersey (2002).

##### **Detailed bibliography**

"Kent and Riegel's HANDBOOK OF INDUSTRIAL CHEMISTRY AND BIOTECHNOLOGY", 11th Ed. Edited by James A. Kent, Ph.D., Springer (2007).

"Seguridad industrial en plantas químicas y energéticas. Fundamentos, evaluación de riesgos y diseño" 2<sup>a</sup> edición, J. M<sup>a</sup>. Storch de Gracia, T. García Martín, Ed. Díaz de Santos, Madrid (2008)

"Preparación y evaluación de proyectos", Nassir Sapag, Reinaldo Sapag, McGraw-Hill, Mexico (1989).

"Teoría General de Proyectos: Dirección de Proyectos" De Cos Castillo, Manuel. Editorial Síntesis S.A. 1996.

"Teoría General de Proyectos: Ingeniería de Proyectos" De Cos Castillo, Manuel. Editorial Síntesis S.A. 1997.

"Dirección y gestión de proyectos" Gómez-Senent, E., Chiner, M., Capuz, S., Universidad Politécnica de Valencia, Valencia (1994).

"El proyecto, diseño en ingeniería", Gómez-Senent, E., Universidad Politécnica de Valencia, Valencia (1997).

##### **Journals**

A list will be distributed every course.

##### **Web sites of interest**

<http://www.essentialchemicalindustry.org/chemicals.html>

#### **OBSERVATIONS**