

COURSE GUIDE

2023/24

Faculty 215 - Faculty of Chemistry

Cycle .

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…

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 37%
- Oral presentation of assigned tasks, Reading 8%

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

"Chemical Engineering Design", Ray Sinnott, Gavin Towler, Butterworth-Heinemann, Elsevier (2019)

"Plant Design and Economics for Chemical Engineers" Max S. Peters, Klaus D. Timmerhaus, Ronald E. West, McGraw Hill (2003)

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

"Chemical Process Safety: Fundamentals with Applications" 2ª 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).

"Process Industry Economics. Principles, Concepts and Applications" David Brennan, Elsevier (2020)

"Developing An Industrial Chemical Process: An Integrated Approach" Joseph Mizrahi, CRC Press (2002)

"Security Risk Assessment in the Chemical and Porcess Industry" Genserik Reniers, Nima Khakzad and Pieter Van Gelder, De Gruyter (2018)

Journals

A list will be distributed every course.

Web sites of interest

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

OBSERVATIONS