



1. General information

Course: CHEMICAL PROCEDURES FOR INDUSTRY
Type: ELECTIVE
Degree: 409 - CHEMISTRY
Center: 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY
Year: 4

Main language: Spanish
Use of additional languages:
Web site:

Code: 57335
ECTS credits: 6
Academic year: 2022-23
Group(s): 20
Duration: C2
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: ANA RAQUEL DE LA OSA PUEBLA - Group(s): 20

| Building/Office | Department | Phone number | Email | Office hours |
|----------------------------|--------------------|--------------|-----------------------|--|
| Enrique Costa. Despacho 16 | INGENIERÍA QUÍMICA | +34926051963 | anaraquel.osa@uclm.es | Tuesday 11:00-13:00, Wednesday and Thursday 9:00-11:00 |

Lecturer: M^º JESUS RAMOS MARCOS - Group(s): 20

| Building/Office | Department | Phone number | Email | Office hours |
|-----------------|--------------------|--------------|--------------------------|---|
| ITQUIMA | INGENIERÍA QUÍMICA | 6348 | mariajesus.ramos@uclm.es | Monday, Tuesday and Friday 9.30-11.30 h |

2. Pre-Requisites

To have passed the basic training module

3. Justification in the curriculum, relation to other subjects and to the profession

This subject is related to the subject of Chemical Engineering. The students learn different industrial chemical processes where basic operations are used (shown in the subject of Chemical Engineering). In addition, this subject gives a global vision of what is the ch

4. Degree competences achieved in this course

Course competences

| Code | Description |
|------|---|
| CB03 | Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues. |
| CB04 | Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences. |
| E05 | Know the chemical elements and their compounds, their forms of obtaining, structure, properties and reactivity, as well as the main techniques for their analysis |
| E16 | Plan, design and develop projects and experiments |
| G02 | Be able to gather and interpret data, information and relevant results, obtain conclusions and issue reasoned reports on scientific, technological or other problems that require the use of chemical tools |
| G03 | Know how to apply the theoretical-practical knowledge acquired in the different professional contexts of Chemistry |
| G04 | Know how to communicate, orally and in writing, the knowledge, procedures and results of chemistry, both specialized and non-specialized |
| G05 | Acquire and adapt new knowledge and techniques of any scientific-technical discipline with incidence in the chemical field |
| T03 | Proper oral and written communication |
| T05 | Organization and planning capacity |
| T06 | Ability to approach decision making |
| T07 | Ability to work as a team and, where appropriate, exercise leadership functions, fostering the entrepreneurial character |
| T08 | Skills in interpersonal relationships |
| T10 | Ability to use specific software for chemistry at user level |
| T11 | Ability to obtain bibliographic information, including Internet resources |

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Encourage and promote in the student all those values ϵ and attitudes inherent to scientific activity.

To have a general vision about the different chemical-industrial processes, the economic importance that each one of them has and the industrial interest that the products and subproducts obtained have.

Provide the student with knowledge about the occupational health and safety of the different chemical-industrial processes and their environmental impact, insisting that a good design of the process also implies that it is safe and ecological.

To ensure that the student is able to search and select information in the field of Chemistry and Chemical Engineering and that he / she is capable of processing and presenting it adequately both orally and in writing.

Develop your capacity for synthesis, being critical and objective.

Develop your ability to work as a team.

Learn to develop topics and acquire skills in the oral and written presentation at the time of the presentation of results.

Additional outcomes

To develop students' capacity for initiative in approaching and solving specific chemistry problems, as well as for interpreting the results obtained

6. Units / Contents

Unit 1: The Industrial Chemistry

Unit 2: Air Industry

Unit 3: Water

Unit 4: Nitrogen compounds of industrial interest

Unit 5: Sulfur and Sulfuric acid

Unit 6: Potassium ores

Unit 7: Phosphate rocks

Unit 8: Cement and plaster

Unit 9: Use of Silica

Unit 10: Safety and industrial hygiene

7. Activities, Units/Modules and Methodology

| Training Activity | Methodology | Related Competences (only degrees before RD 822/2021) | ECTS | Hours | As | Com | Description |
|---|----------------------------------|---|------|-------|----|-----|--|
| Class Attendance (theory) [ON-SITE] | Lectures | CB03 CB04 E05 E16 G02 G03 G04 G05 | 1 | 25 | N | | - Master class |
| Class Attendance (practical) [ON-SITE] | Practical or hands-on activities | CB03 CB04 E05 G03 G04 G05 T07 T08 | 0.6 | 15 | Y | N | - Visit to companies and exhibition of works |
| Problem solving and/or case studies [ON-SITE] | Problem solving and exercises | CB03 CB04 E16 T03 T05 T06 | 0.4 | 10 | Y | N | - Resolution on the whiteboard of cases and exercises |
| Group tutoring sessions [ON-SITE] | Group Work | CB03 CB04 T06 T07 T08 | 0.1 | 2.5 | N | | - Discussion and resolution of concepts and doubts |
| Writing of reports or projects [OFF-SITE] | Self-study | CB03 CB04 G02 G03 G05 T10 T11 | 2.6 | 65 | Y | N | - Autonomous work of the student |
| Study and Exam Preparation [OFF-SITE] | Self-study | CB03 CB04 E05 G04 T03 T05 T10 T11 | 1.1 | 27.5 | N | | - Autonomous work of the student |
| Final test [ON-SITE] | Assessment tests | CB03 CB04 E05 G04 T03 T05 T10 T11 | 0.2 | 5 | Y | Y | - Two partial tests (Continuous Assessment) or one Final Test (Non-Continuous Assessment) will be carried out. |

Total: 6 150

Total credits of in-class work: 2.3 Total class time hours: 57.5

Total credits of out of class work: 3.7 Total hours of out of class work: 92.5

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

| Evaluation System | Continuous assessment | Non-continuous evaluation* | Description |
|-----------------------------|-----------------------|----------------------------|--|
| Other methods of assessment | 10.00% | 0.00% | VISIT TO COMPANIES AND EXHIBITION OF WORKS |
| Final test | 90.00% | 100.00% | FINAL EXAM |
| Total: | 100.00% | 100.00% | |

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

Modules are completed by taking either a single (final) module examination or two partial exams. The first partial will serve to eliminate matter in the ordinary final exam. The minimum grade required to make average between the two partials is 4.0 points.

To complete the program, the student shall have to obtain a minimum of 5.0 points.

The visit to companies and the exhibition of works will be 10% of the final grade.

The rest (90%) is the qualification of the exams, partial or final, as the case may be.

Non-continuous evaluation:

Non-continuous assessment will be carried out by means of a final exam. The minimum mark to pass the course will be 5 out of 10.

Specifications for the resit/retake exam:
The same criteria as final exam

Specifications for the second resit / retake exam:
The same criteria as final exam

| 9. Assignments, course calendar and important dates | |
|---|-------|
| Not related to the syllabus/contents | |
| Hours | hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 25 |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities] | 15 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 10 |
| Group tutoring sessions [PRESENCIAL][Group Work] | 2.5 |
| Writing of reports or projects [AUTÓNOMA][Self-study] | 65 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 27.5 |
| Final test [PRESENCIAL][Assessment tests] | 5 |
| Global activity | |
| Activities | hours |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities] | 15 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 10 |
| Group tutoring sessions [PRESENCIAL][Group Work] | 2.5 |
| Writing of reports or projects [AUTÓNOMA][Self-study] | 65 |
| Final test [PRESENCIAL][Assessment tests] | 5 |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 25 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 27.5 |
| Total horas: 150 | |

| 10. Bibliography and Sources | | | | | | |
|---|--|------------------|-----------|------|------|-------------|
| Author(s) | Title/Link | Publishing house | Citv | ISBN | Year | Description |
| A. Heaton | The Chemical Industry | Blackie A. & P. | London | | 1997 | |
| A. Vian | Introducción a la Química Industrial. | Reverté | Barcelona | | 1994 | |
| BUCHNER, W.; SCHLIEBS, R., WINTER, G.; BUCHEL, K.H. | Industrial Inorganic Chemistry | Verlag Chemie. | New York | | 1989 | |
| F. ULLMANN, | Ullmann's Encyclopedia of Industrial Chemistry | Verlag Chemie. | Weinheim | | 1988 | |
| G.T. AUSTIN, | Manual de Procesos Químicos en la Industria | Mc Graw Hill | Mejico | | 1992 | |
| J. A. KENT, | Riegel's Handbook of Industrial Chemistry | Chemical Society | London | | 1974 | |
| R. THOMPSON, | The Modern Inorganic Chemicals Industry | Chemical Society | London | | 1987 | |