



1. General information

Course: PROCESSES AND PRODUCTS INTEGRATED LABORATORY

Type: CORE COURSE

Degree: 344 - CHEMICAL ENGINEERING

Center: 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY

Year: 4

Main language: Spanish

Use of additional
languages:

Web site:

Code: 57730

ECTS credits: 6

Academic year: 2021-22

Group(s): 21

Duration: C2

Second language: English

English Friendly: Y

Bilingual: N

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2. Pre-Requisites

Not established

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

This subject is the second of the two in which the matter is divided experimentation in chemical engineering. Its study is fundamental, since given its eminent practical character, the student has the opportunity to apply the theoretical knowledge previously acquired in other subjects, as well as integrate and use them jointly.

It also acquires skills in the management of equipment characteristic of the profession, especially in those designed on a pilot scale, a specific feature of this laboratory.

The implantation of this subject in the fourth course of the degree in chemical engineering assumes that the previous theoretical knowledge required in the same (mainly mass and energy balances, heat transmission and flow of fluids) have already been developed.

4. Degree competences achieved in this course

Course competences

Code	Description
E19	Knowledge about material and energy balances, biotechnology, material transfer, separation operations, chemical reaction engineering, reactor design, and recovery and transformation of raw materials and energy resources.
E20	Capacity for analysis, design, simulation and optimization of processes and products.

E21	Capacity for the design and management of applied experimentation procedures, especially for the determination of thermodynamic and transport properties, and modeling of phenomena and systems in the field of chemical engineering, systems with fluid flow, heat transfer, mass transference, kinetics of chemical reactions and reactors.
E22	Ability to design, manage and operate simulation, control and instrumentation procedures of chemical processes.
E26	Knowledge and capacity of management and specification of the main industrial equipment in the area of knowledge of chemical engineering
E40	Ability to evaluate and implement quality criteria in the chemical industry and chemical laboratories
G01	Capacity for the direction, of the activities object of the engineering projects described in the competence G1.
G02	Knowledge in basic and technological subjects, which enables them to learn new methods and theories, and give them versatility to adapt to new situations.
G03	Ability to solve problems with initiative, decision making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of Chemical Engineering.
G17	Synthesis capacity
G19	Ability to analyze and solve problems
G22	Creativity and initiative
G24	Recognition of diversity, multiculturalism and gender equality
G26	Obtaining skills in interpersonal relationships.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To have the ability to handle equipment and facilities characteristic of the chemical industry, both at laboratory scale and pilot plant.

To practice in a practical way the knowledge acquired about Basic Operations, Fluid Flow, Heat Transmission, Chemical Reaction Engineering, Separation and Control and Instrumentation Operations.

To be able to unify the knowledge acquired about Basic Operations, Fluid mechanics, Heat Transmission, Chemical Reaction Engineering, Separation Operations and Control and Instrumentation of the degree, and to apply them jointly.

6. Units / Contents

Unit 1: Distillation

Unit 2: Evaporation

Unit 3: Absorption

Unit 4: Chemical reaction

Unit 5: Filtration

Unit 6: Ultrafiltration

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	E19 E20 E21 E22 E26 E40 G01 G02 G03 G17 G19 G22 G24 G26	1.4	35	Y	Y	
Group tutoring sessions [ON-SITE]	Group tutoring sessions	E19 E20 E21 E22 E26 E40 G01 G02 G03 G17 G19 G22 G24 G26	0.9	22.5	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	E19 E20 E21 E22 E26 E40 G01 G02 G03 G17 G19 G22 G24 G26	3.6	90	N	-	
Final test [ON-SITE]	Assessment tests	E19 E20 E21 E22 E26 E40 G01 G02 G03 G17	0.1	2.5	Y	Y	
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

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
Assessment of active participation	55.00%	55.00%	
Final test	45.00%	45.00%	
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:

In order to pass the subject, it will be required in each of the sections of the evaluation system a minimum mark of 4.0 over 10. The average mark must be equal to or greater than 5.0 over 10.

Non-continuous evaluation:

Evaluation criteria not defined

Specifications for the resit/retake exam:

In order to pass the subject, it will be required in each of the sections of the evaluation system a minimum mark of 4.0 over 10. The average mark must be equal to or greater than 5.0 over 10.

Specifications for the second resit / retake exam:

In order to pass the subject, it will be required in each of the sections of the evaluation system a minimum mark of 4.0 over 10. The average mark must be equal to or greater than 5.0 over 10.

9. Assignments, course calendar and important dates**Not related to the syllabus/contents**

Hours	hours
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10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
	El alumno debe utilizar la misma bibliografía recomendada en las asignaturas teóricas sobre las que se apoya este laboratorio: Balances Materia y Energía, Transmisión de Calor, Flujo de Fluidos.					
Profesores permanentes del Dpto de Ing. Química en la Facultad de Ciencias y Tecnologías Químicas	Laboratorio de Ingeniería Química IV. En Actividades Prácticas de la Ingeniería Química	Facultad de Ciencias y Tecnologías Químicas	Ciudad Real	978-84-934398-3-5	2008	