Teaching Guide				
Identifying Data				2021/22
Subject (*)	Chemical Technology		Code	730G04051
Study programme	Grao en Enxeñaría en Tecnoloxías Industriais			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Third	Obligatory	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e IndustrialQuímica			
Coordinador	Filgueira Vizoso, Almudena	E-mail	almudena.filgueira.vizoso@udc.es	
Lecturers	Filgueira Vizoso, Almudena	E-mail	almudena.filgueira.vizoso@udc.es	
Web	https://campusvirtual.udc.gal/login/index.php			
General description	In this subject students are shown physical separation systems, transfer operations, physical separation systems as well as transfer operations, all applied to industrial chemical processes. Know and design the equipment needed for solid-gas separation To understand the storage possibilities and the problems of the same			
Contingency plan	1. Changes in content - No changes will be made 2. Methodologies Teaching methodologies that are maintained - Master session - Tutored works (computes in the evaluation) - Laboratory practices (essential to pass the subject) - Mixed probability - Problem solving - Field trips Teaching methodologies that are modified - Field trips (will not be done in case we are not allowed to do them) 3. Mechanisms for personalized attention to students - Email: Daily. Of use to make consultations, request virtual meetings to resolve doubts and follow up on supervised work. - Moodle: Daily. According to the needs of the students. - Teams: 1 weekly session in a large group to advance two theoretical contents and supervised works in the time slot assigned to the subject in the School's classroom calendar. From 1 to 2 weekly sessions (or more depending on the demand or students) in a small group (up to 6 people), for follow-up and support in carrying out the "supervised work". This dynamic allows a standardized and adjusted monitoring of the learning needs of the students to develop the work of the subject. 4. Modifications in the evaluation There will be no modifications to the evaluation. In the event that any of the scheduled activities cannot be scored, this activity will go to the mixed test. 5. Modifications of the bibliography or webgraphy No changes will be made.			

Study programme competences / results	
Code	Study programme competences / results

A28	TEQ3 Capacidade para o deseño e xestión de procedementos de experimentación aplicada, especialmente para a determinación de propiedades termodinámicas e de transporte, e modelado de fenómenos e sistemas no ámbito da enxeñaría química, sistemas con fluxo de fluídos, transmisión de calor, operacións de transferencia de materia, cinética das reaccións químicas e reactores.
B4	CB4 Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como leigo
B6	B3 Ser capaz de concibir, deseñar ou poñer en práctica e adoptar un proceso substancial de investigación con rigor científico para resolver calquera problema formulado, así como de comunicar as súas conclusións ?e os coñecementos e razóns últimas que as sustentan? a un público tanto especializados como leigo dun xeito claro e sen ambigüidades
B7	B5 Ser capaz de realizar unha análise crítica, avaliación e síntese de ideas novas e complexas
B8	B7 Deseñar e realizar investigacións en ámbitos novos ou pouco coñecidos, con aplicación de técnicas de investigación (con metodoloxías tanto cuantitativas como cualitativas) en distintos contextos (ámbito público ou privado, con equipos homoxéneos ou multidisciplinares etc.) para identificar problemas e necesidades
C3	C5 Entender a importancia da cultura emprendedora e coñecer os medios ao alcance das persoas emprendedoras.
C4	C6 Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C6	C8 Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Know the physical separation systems as well as the transfer operations applied to the Industrial chemical processes. To know and design the equipment necessary for the development of the Solid-gas separation. Understand storage possibilities and associated issues.	A28	B4 B6 B7 B8	C3 C4 C6

Contents	
Topic	Sub-topic
Blocks or topics to develop the levels laid down in the verification of memory tab	Auxiliary services in industries: introduction to chemical technology, materials protection, water, gas distribution networks. Operations handling: storage of fluids, flow of fluids, measuring and pumping of fluids, piping and accessories, operations with solids. Separation operations: introduction to systems solid, separation (sedimentation and flotation) solid-liquid, solid-liquid separation (filtration and centrifugation), separation of solids and liquids into gases. Transfer operations: solid-liquid extraction, extraction liquidoliquido; Distillation, absorption, adsorption and ion exchange.
AUXILIARY SERVICES IN INDUSTRIES	Introduction to chemical technology Water distribution networks Gases Protection of materials
HANDLING OPERATIONS	Fluid storage Fluid flow Measuring and pumping fluids Pipes and fittings Operations with solids
SEPARATION OPERATIONS	Introduction to solid-fluid systems Solid-liquid separation: sedimentation, flotation, filtration and centrifugation Separation of solids and liquids into gases

MATERIAL TRANSFER OPERATIONS	Solid-liquid extraction Liquid-liquid extraction Distillation Absorption Adsorption and ion exchange

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Supervised projects	B6 B7 B8 C3 C4 C6	10	15	25
Field trip	B4 C4	4	2	6
Mixed objective/subjective test	A28 B6 B7	0	10	10
Problem solving	B7 C4 C6	7	21	28
Guest lecture / keynote speech	A28 B6 B7	37	37	74
Personalized attention		7	0	7
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Supervised projects	It is an option based on the resolution by the students of the responsibility for their own learning. This teaching system is based on two basic elements: the independent learning of the students and the monitoring of this learning by the teacher-tutor
Field trip	Activities developed in a context external to the university academic environment (companies, Institutions, agencies, monuments, etc.) related to the field of study of the subject.
Mixed objective/subjective test	Exam that integrates standard questions and objective type questions. As for the former, it includes open-ended questions of development, the latter can combine multiple-choice, ranking, short-answer, discrimination, completion and association questions.
Problem solving	Technique through which a specific problem situation has to be solved, based on the knowledge that has been worked on, which may have more than one possible solution
Guest lecture / keynote speech	Oral presentation complemented by the use of audiovisual media in order to transmit knowledge and facilitate learning.

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech Supervised projects Field trip	Tutored works: assistance to personalized tutorials is recommended. The student will receive guidance on how to start and carry out the work according to the criteria specified below. Oral presentation: made with the support of slides and each group of students will have a set time for it. In case of academic dispensation the student will contact the teachers of the subject to agree on the planning of teaching activities, meeting the needs that the student may have within the existing possibilities.

Assessment			
Methodologies	Competencies / Results	Description	**Qualification**
Mixed objective/subjective test	A28 B6 B7	Exam	65

Supervised projects	B6 B7 B8 C3 C4 C6	Protected works will be carried out by the students with the help of teachers of the subject. These works must provide to teachers both in paper format by email or platform designated by the faculty.	30
Field trip	B4 C4	Consisten en visitas programadas a instalacións	5

Assessment comments
Students with a qualification greater than 4 in the mixed test will go on to weighing with the rest of the evaluation methodologies. In the event that any of the above methodologies is not carried out, the qualification of that methodology will pass to the mixed test. In the first evaluation opportunity, the qualification of the works and the mixed test will be taken into account as long as in this the minimum of 4. The same criterion will be applicable for the second opportunity. For the advanced call, the mixed test will have a value of 100% of the qualification. The fraudulent performance of the tests or evaluation activities will directly imply the failure grade "0" in the matter in the corresponding call, thus invalidating any grade obtained in all the evaluation activities for the extraordinary call.

Sources of information	
Basic	- J.M.Coulson (). Ingeniería química. - Andrés Arévalo (). Tecnología química. - Ángel Vian Ortuño (). Introducción a la química industrial. - Eugenio Muñoz Camacho (). Ingeniería química. Apuntes de clase e traballosApuntes de clase e traballos
Complementary	

Recommendations
Subjects that it is recommended to have taken before
QUÍMICA/730G04005
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments

1. The
delivery of the documentary works carried out in this matter:
1.1. It
will be requested in virtual format and / or computer support.
1.2. It
will be done through Moodle, in digital format without the need to print them
1.3. If
done on paper:
- No
plastics will be used.
-
Double-sided prints will be made.
-
Recycled paper will be used.
- Draft
printing will be avoided.
2.- A
sustainable use of resources and the prevention of negative impacts on the
natural environment must be made.
3.- The
importance of ethical principles related to the values of sustainability in
personal and professional behavior must be taken into account.
4.- As
stated in the different regulations of application for university teaching,
the gender perspective must be incorporated in this matter (non-sexist
language will be used, bibliography of authors of both sexes will be used,
intervention in class of students will be encouraged and students ...).
5.-
Work will be done to identify and modify prejudices and sexist attitudes, and
the environment will be influenced to modify them and promote values of
respect and equality.
6.
Situations of discrimination based on gender must be detected and actions and
measures will be proposed to correct them.
7. The
full integration of students who for physical, sensorial, psychic or
sociocultural reasons, experience difficulties to adequate, equal and
beneficial access to university life will be facilitated.