Teaching Guide				
Identifying Data				2019/20
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 Rodriguez Guerreiro, Maria Jesus	E-mail	almudena.filgueira.vizoso@udc.es maria.guerreiro@udc.es	
Web				
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			

Study programme competences	
Code	Study programme competences
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		
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	Ordinary class hours	Student?s personal work hours	Total hours
Supervised projects	B6 B7 B8 C3 C4 C6	8	12	20
Field trip	C4	4	2	6
Laboratory practice	A28 B4	6	9	15
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	32	32	64
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.
Laboratory practice	Metodoloxía que permite que os estudiantes aprendan efectivamente a través da realización de actividades de carácter práctico, tales como demostraciós, exercicios, experimentos e investigacións

Mixed objective/subjective test	Proba que integra preguntas tipo de probas de ensaioey preguntas tipo de probas obxetivas. En canto ás primeiras, recolle preguntas abertas de desarrollo, as segundas poden combinar preguntas de resposta múltiple, de ordenación, de resposta breve, de discriminación, de completar e de asociación
Problem solving	Técnica mediante a que ten que resolverse unha situación problemática concreta, a partir dos coñecementos que se traballaron, que pode ter máis de unha posible solución
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 Laboratory practice	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. Laboratory Practices: The student will be cited in advance on the Moodle platform or on the bulletin board of the School. The practices will be carried out in the Laboratory of Chemical Technology and Environment of the Building of Workshops and must be provided with the manual of practices of the subject (Copy-shop) 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**	**Description**	**Qualification**
Mixed objective/subjective test	A28 B6 B7	Exame	80
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.	15
Laboratory practice	A28 B4	Consiste na realización das prácticas de laboratorio e o informe final das mesmas	5

Assessment comments
It is necessary to take a minimum of 3.5 in the partial exams (if any) and an average of 4 to count the other methodologies. In case there are no partial exams, the necessary grade to be able to do average with the other activities will be 4.In case of not being able to perform any of the above mentioned methodologies the evaluation of the same Will pass to the objective test. Attendance at more than 90% of scheduled sessions will be mandatory. In case the field exits are made, they will be obligatory to surpass the subject. The laboratory practices will be necessary to overcome the matter

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
Para axudar a conseguir un entorno inmediato sostido e cumprir co obxetivo da acción número 5: ?Docencia e investigación saludable e sustentable ambiental e social? do "Plan de Acción Green CampusFerrol": A entrega dos traballos documentales que se realicen nesta materia: ? Solicitarase n en formato virtual e/ou soporte informático ? Realizarase a través de Moodle, en formato dixital sen necesidade de imprimirlos ? En caso de ser necesario realizarlos en papel: - Non se emplearán plásticos   - Realizaranse impresiones a doble cara.   - Emplearase papel reciclado.   - Evitarase a impresión de borradores. Incorporarase perspectiva de xénero na docencia desta materia (usarase lenguaxe non sexista, utilizarase bibliografía de autores de ambos sexos, propiciarase a intervención en clase de alumnos e alumnas?)

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.