

## GUÍA DOCENTE ABREVIADA DE LA ASIGNATURA

G787 - Advanced Separation Processes

Grado en Ingeniería Química

Curso Académico 2021-2022

1. DATOS IDENTIFICATIVOS				
Título/s	Grado en Ingeniería Química		Tipología v Curso	Optativa. Curso 4
Centro	Escuela Técnica Superior de Ingenieros Industriales y de Telecomunicación			
Módulo / materia	MATERIA OPCIÓN A: INGENIERÍA QUÍMICA FUNDAMENTAL MATERIA OPCIÓN D: EUROPEAN PROJECT SEMESTER MÓDULO OPTATIVO			
Código y denominación	G787 - Advanced Separation Processes			
Créditos ECTS	6	Cuatrimestre	Cuatrimestral (2)	
Web				
Idioma de impartición	Inglés	Forma de impartición	Presencial	

Departamento	DPTO. INGENIERIAS QUIMICA Y BIOMOLECULAR
Profesor responsable	EUGENIO BRINGAS ELIZALDE
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Número despacho	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO EUGENIO BRINGAS ELIZALDE (S2013)
Otros profesores	INMACULADA ORTIZ URIBE PEDRO MANUEL GOMEZ RODRIGUEZ GABRIEL ZARCA LAGO SALVADOR ASENSIO DELGADO

### 3.1 RESULTADOS DE APRENDIZAJE

- Be able to know the fundamentals and applications of rate-controlled separation processes:
  - Membrane-based separation processes
  - Solid-fluid separation processes

#### 4. OBJETIVOS

Be able to know and understand from a qualitative and quantitative point of view the phenomena taking place in membrane units and adsorption/ion exchange columns.

Be able to identify and compare advanced separation processes on their application in solving separation problems in the context of industry and environment.

#### 6. ORGANIZACIÓN DOCENTE

##### CONTENIDOS

1	1. UNIT 1: Introduction to advanced separation processes 1.1. Introduction 1.2. Definition and classification of advanced separation processes 1.3. Examples of environmental and industrial applications
2	2. UNIT 2. Membrane-based separation processes  2.1. Pressure driven membrane processes. Fundamentals, design and applications.  2.2. Concentration gradient driven membrane processes. Fundamentals, design and applications.  2.3. Other membrane-based separation processes. Electrically-driven membrane processes. . Fundamentals, design and applications.
3	3. UNIT 3. Fluid-solid separation processes  3.1. Adsorption. Fundamentals, design and applications.  3.2. Ion Exchange. Fundamentals, design and applications.

#### 7. MÉTODOS DE LA EVALUACIÓN

Descripción	Tipología	Eval. Final	Recuper.	%
Exámenes Parciales	Examen escrito	No	Sí	45,00
Portfolio	Otros	No	No	10,00
Presentation Practical Sessions	Examen oral	No	Sí	45,00
<b>TOTAL</b>				<b>100,00</b>

##### Observaciones

Continuous assessment procedure is based on the execution of tests 1 (22,5%) and 2 (22,5%) to evaluate the theoretical contents, a power point presentation to evaluate the practical sessions (45%) and the delivery of a portfolio (10%). The portfolio's content will be also evaluated in tests.

The student who do not follow the continuous evaluation procedure will have the option of performing a final exam in the date scheduled by the ETSIYT (minimum mark 5.0).

In case of interruption of face-to-face learning by activation of health alert activation, the assesment procedure will not be modified and it will be performed using virtual tools.

##### Criterios de evaluación para estudiantes a tiempo parcial

It will be performed according to Article 24 in 'Reglamento de los Procesos de Evaluación en la Universidad de Cantabria del Reglamento de los Procesos de Evaluación de la Universidad de Cantabria'

## 8. BIBLIOGRAFÍA Y MATERIALES DIDÁCTICOS

### BÁSICA

- WANKAT, P.C., Rate-Controlled Separations, 1996, Blackie Academic & Professional.
- SEADER, J.D., HENLEY, E.J. Separation Process Principles. 2006. 2nd Wiley & Sons.
- CUSSLER, E.L., Diffusion. Mass Transfer in Fluid Systems. 2009. 3rd Ed. Cambridge University Press.
- DRIOLI, E., CRISCUOLI, A., CURCIO, E., Membrane Contactors: Fundamentals, Applications and Potentialities. 2006. Elsevier.
- COULSON, J.M. RICHARDSON, J.F. Chemical Engineering (Particle Technology and Separation Processes). 2002. Oxford; Butterworth Heinemann, 2002

Esta es la Guía Docente abreviada de la asignatura. Tienes también publicada en la Web la información más detallada de la asignatura en la Guía Docente Completa.