

SUBJECT TEACHING GUIDE

G787 - Advanced Separation Processes

Degree in Chemical Engineering

Academic year 2019-2020

1. IDENTIFYING DATA			
Degree	Degree in Chemical Engineering	Type and Year	Optional. Year 4
Faculty	School of Industrial Engineering and Telecommunications		
Discipline	Subject Area: Option A: Fundamental Chemical Engineering Subject Area: Option D: European Project Semester Optional Module		
Course unit title and code	G787 - Advanced Separation Processes		
Number of ECTS credits allocated	6	Term	Semester based (2)
Web			
Language of instruction	English	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIAS QUIMICA Y BIOMOLECULAR
Name of lecturer	EUGENIO BRINGAS ELIZALDE
E-mail	eugenio.bringas@unican.es
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO (S2013)
Other lecturers	INMACULADA ORTIZ URIBE PEDRO MANUEL GOMEZ RODRIGUEZ

3.1 LEARNING OUTCOMES

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

4. OBJECTIVES

6. COURSE ORGANIZATION	
CONTENTS	
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.
3	3. UNIT 3. Fluid-solid separation processes 3.1. Adsorption. Fundamentals, design and applications. 3.2. Ion Exchange. Fundamentals, design and applications.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Partial Exams	Written exam	No	Yes	45,00
Portfolio	Others	No	No	10,00
Presentation Practical Sessions	Oral Exam	No	Yes	45,00
TOTAL				100,00
Observations				
<p>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.</p> <p>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 ETSIIyT (minimum mark 5.0)</p>				
Observations for part-time students				
Article VI from Reglamento de los Procesos de Evaluación en la Universidad de Cantabria will be applied				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
<ul style="list-style-type: none"> - 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

