SUBJECT TEACHING GUIDE

G1633 - Sustainable chemical engineering and chemistry

Degree in Chemical Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Chemical Engineering			Type and Year	Optional. Year 4
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	SUBJECT OPTION C: GUIDANCE IN ADVANCED CHEMICAL ENGINEERING Optional Module				
Course unit title and code	G1633 - Sustainable chemical engineering and chemistry				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIAS QUIMICA Y BIOMOLECULAR
Name of lecturer	MARIA MARGALLO BLANCO
E-mail	maria.margallo@unican.es
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. SEMINARIO S2062 (S2062)
Other lecturers	ENRIQUE ALVAREZ GUERRA JONATHAN ALBO SANCHEZ ESTHER SANTOS SANTAMARIA

3.1 LEARNING OUTCOMES
- Sustainability in Chemistry: concept and applications
- Chemical Engineering and Sustainability
- Case studies applying the sustainability concept

4. OBJECTIVES
Knowledge, understanding and applications to simple problems of the sustainability fundamentals in Chemistry and Engineering

6. COURSE ORGANIZATION

CONTENTS	
1	PART I. SUSTAINABILITY AND PRECAUTIONARY PRINCIPLE Lesson 1. Sustainability concept. Case study 1. Biorefineries.
2	PART II. FROM GREEN TO SUSTAINABLE CHEMISTRY Lesson 2. Elements for the transition fro green to sustainable chemistry. Case study 2. Circular economy.
3	PART III. SUSTAINABLE CHEMISTRY ENGINEERING Lesson 3. Green processes engineering and sustainable engineering. Case study 3. Challenges of the sustainable chemistry.
4	PART IV I. OTHER CASE STUDIES Case study 4. Application of green chemistry principles. Case study 5. Sustainability asssessment of industrial sectors.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Competences development in the class and based on reports and its oral dissemination.	Work	No	Yes	100,00
TOTAL				100,00

Observations

Evaluation will be based: 50% on participation, motivation and interest in the lectures, 30% on personal work and 20% on team work.
In case team work is not be possible, this mark will be included within the personal work

Observations for part-time students

Partial time students are allowed. First year lectures and secon year homework

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Mestres, R. 2011. Química Sostenible. Síntesis, D.L. Madrid, ISBN: 978-84-9756-786-2.

Allen, D.T. and Shonnard D.R. 2011. Sustainable Engineering. Concepts, Design and Case Studies. Upper Saddle River, New Jersey: Prentice Hall, ISBN: 978-0-13-275654-9.