

SUBJECT TEACHING GUIDE

G1772 - Product Design Project

Degree in Chemical Engineering First Degree in Chemical Engineering

Academic year 2024-2025

| 1. IDENTIFYING DATA | | | |
|----------------------------------|---|------------------|---|
| Degree | Degree in Chemical Engineering First Degree in Chemical Engineering | | Type and Year Optional. Year 4 Optional. Year 4 |
| Faculty | School of Industrial Engineering and Telecommunications | | |
| Discipline | Subject Area: Option A: Fundamental Chemical Engineering Optional Module | | |
| Course unit title and code | G1772 - Product Design Project | | |
| Number of ECTS credits allocated | 6 | Term | Semester based (1) |
| Web | | | |
| Language of instruction | English | Mode of delivery | Face-to-face |

| | | | |
|------------------|---|--|--|
| Department | DPTO. DE QUIMICA E INGENIERIA DE PROCESOS Y RECURSOS. | | |
| Name of lecturer | BERTA GALAN CORTA | | |
| E-mail | berta.galan@unican.es | | |
| Office | E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 3. DESPACHO PROFESORES (S3015) | | |
| Other lecturers | | | |

| 3.1 LEARNING OUTCOMES |
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| - The student learns how to define the needs of a new chemical product; how to identify the candidate chemicals and/or mixtures of chemicals and how to quickly evaluate the important process design issues . |
| - Effective communication of a product design cases through presentations. |
| - After a thorough introduction of the product concept design path (following the tradition of Cussler and Moggridge) the course utilizes several case studies of product design in order to introduce the concepts of specialty chemicals, micro- and macstructured products and devices for chemical changes. |

4. OBJECTIVES

The main goal of this course is to learn how to design a new chemical product from market surveys till the stage where the manufacturing process is considered. The course introduces basic concepts and methodologies essential to attain the above mentioned objectives. Examples are given to illustrate methodologies and integrate previous knowledge of chemical engineering fundamentals and technologies.

The objective of this course is to give the student a view of chemical product design

The objective is also to highlight the currently available methods and tools that can be applied to solve various types of problems associated with product-process design in a systematic and integrated manner.

The objective of this course is to show the importance of product design issues to the development of new products or to the re-design of established product

Last objective is to develop a case study for the design (or re-design) of a chemical product

6. SUBJECT PROGRAM

CONTENTS

| | |
|----|---|
| 1 | Lesson 1. Introduction of Product Design. |
| 2 | Lesson 2. Innovations in product design—History and approaches. |
| 3 | Lesson 3. Needs |
| 4 | Lesson 4. Ideas and selection. |
| 5 | Lesson 5. Product manufacture |
| 6 | Lesson 6. Ecodesign |
| 7 | Lesson 7. Case studies |
| 8 | Lesson 8. Conferences |
| 9 | Lesson 9: Visit |
| 10 | Lesson 10: Intellectual Property |

7. ASSESSMENT METHODS AND CRITERIA

| Description | Type | Final Eval. | Reassessn | % |
|---|--------|-------------|-----------|---------------|
| Oral presentations | Work | No | Yes | 20,00 |
| Oral presentation | Work | No | Yes | 20,00 |
| Oral presentations | Work | No | Yes | 20,00 |
| Oral presentation | Work | No | Yes | 20,00 |
| Visit and conferences | Others | No | No | 20,00 |
| TOTAL | | | | 100,00 |
| Observations | | | | |
| If the student do not upload the presentations on time, it is necessary to attend the ordinary or extraordinary final exam. | | | | |
| Observations for part-time students | | | | |
| Part-time student have to attend the ordinary final exam. | | | | |

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Cussler, E. L. and G. D. Moggridge. 2011. Chemical Product Design, Cambridge University Press. ISBN 10: 0521168228