

30027 - Industrial Chemical Processes

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	436 - Bachelor's Degree in Industrial Engineering Technology 330 - Complementos de formación Máster/Doctorado
ECTS	6.0
Course	XX
Period	Half-yearly
Subject Type	ENG/Complementos de Formación, Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

This subject has the purpose of a total analysis of the industrial chemical processes through mass and energy balances. For the student it is also important the knowledge of specific and usual components in these processes. Moreover, the students learn the key aspects of some selected processes such as air separation and sulfuric acid production, among others.

With the purpose that the students achieve this knowledge a learning process is suggested with lectures and activities in small class (around 20 students) to analyze case studies and the resolution of problems by themselves.

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The learning process of the student is developed from the lectures, guided by the teacher, who also solves and explains model problems. Afterwards, in the problem's lessons in small class the participation of the student increases. The work in small groups also favours the interaction between students helping to the achievement of competences. One more step is the student's work solving the collection of mass and energy balances. The fulfillment of the case study of more complexity in small groups, allows the students to face a real case, promoting competences in the student of information search about the process, data selection to carry out the balances, and also the environmental aspects of the process. The students also learn written presentation with an appropriate format that will be useful later in their TFG (Bachelor's Degree Final Work).

5.2.Learning activities

5.3.Program

- I.- Introduction. Outstanding and distinguishing characteristics of the Chemical Industry.
- II.- Basic knowledge on chemical reactors and unit operations.
- III.- Mass and energy balances in chemical processes.
- IV.- Processes without reaction. Air separation by distillation (cryogenics), adsorption and membranes.
- V.- Processes with reaction: sulfuric acid production.
- VI.- Power generation: coal combustion in fluidized bed, gasification and fuel cells (electrochemistry).
- VII.- Processes in the Oil Refinery.
- VIII.- Polymerization Processes.

5.4.Planning and scheduling

5.5.Bibliography and recommended resources