

DIM-IND-524 Chemical Engineering

SEMESTER: Spring
CREDITS: 4.5 ECTS (3 hrs. per week)
LANGUAGE: Spanish
DEGREES: MII

Course overview

This course is an introduction to Chemical Engineering which allows providing students a vision of the procedures used in the Industry. Pedagogy, as used by many authors in the matter, is using mass balances and energy to introduce students to the understanding and management of flowcharts processes of great importance in the chemical industry.

Prerequisites

Basic knowledge of chemistry.

Course contents

Theory:

At the end of the course the students must be capable of:

1. Knowing the history and evolution of the Chemical Industry.
2. Understanding the concept of unitary operation, knowing the fundamentals of the different types of unitary operations.
3. Knowing the fundamentals and industrial applications of the distillation, absorption, liquid-liquid extraction, adsorption and ionic interchange processes.
4. Understanding the differences between homogeneous and heterogeneous chemical reactions and knowing how to use the kinetic models in the study of the evolution of the reactions.

5. Knowing the fundamentals of the use of catalysts, types of catalysts and their influence of the reaction rate.
6. Carrying out calculations and design of chemical reactors for specific industrial applications.
7. Knowing and analysing the relevance of the chemical processes involved in some industries such as refineries, paper mills, and cement works.
8. Understanding the physical and chemical processes to obtain alternative fuels.

Laboratory:

- 1º.- Synthesis and evaluation of acetylsalicylic acid.
- 2º.- Liquid-Liquid Extraction: water-acetone-MIC system.
- 3º.- Unitary operation Liquid Separation by Distillation.

Textbook

- Basic Principles and Calculations in Chemical Engineering. (8ª edición). David H. Himmelblau. Pearson. Agosto 2012

Grading

Described below are the evaluation criteria indicating the different activities. The percentage of each activity is specified in parenthesis.

1. 20% is the average of two tests conducted during the semester.
2. Final exam is 50%. The minimum score for this exam will be 4.0

3. Laboratory sessions carried out as a team 20%. Both the laboratory work and the written reports will be evaluated.
4. Presentation and defense of a research work 20%.