

60644 - Equipment for Chemical Processes

Syllabus Information

Academic year: 2023/24

Subject: 60644 - Equipment for Chemical Processes

Faculty / School: 100 - Facultad de Ciencias

Degree: 540 - Master's in Industrial Chemistry

ECTS: 6.0

Year: 1

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The objective of the subject is to improve the student's ability to work in the chemical industry. For this purpose, the basic concepts to know and perform a basic sizing of different equipment are explained.

The subject "Equipment for Chemical Processes" is mandatory and is taught in the first semester. The knowledge acquired will allow the student to have the scientific knowledge base necessary to take the elective subjects of Paper Technology, Risk Analysis in the Chemical Industry, Industrial Catalytic Processes and Food Industry Processes. It is recommended to have basic knowledge of chemical engineering.

It is related to SDGs 6,7,8,9, 12 and 13.

2. Learning results

To know the main equipment and installations used in the chemical industry, their purpose and their operation basics.

To select the equipment to be implemented in an industrial chemical process according to productivity and cost reduction criteria

3. Syllabus

- Balances of matter and energy: general principles of conservation.
- Macroscopic balances in processes of continuous contact by equilibrium stages.
- Separation operations. General introduction.
- Correction
- Heat transfer equipment
- Fluid mechanics
- Chemical reactors. Introduction to chemical reactors. Ideal reactors. Reactor optimization for multiple reactions.
- Effects of matter and heat transfer in catalytic reactions. Biochemical reactors.
- Auxiliary Services

4. Academic activities

The subject consists of 6 ECTS, of which 4 ECTS will be devoted to lectures and 2 ECTS to solving problems and case studies.

The 150 hours of student work will be divided into activities as follows:

-40 hours of lectures in which the theoretical contents will be presented and model problems will be solved.

-20 hours of problem solving and case studies.

-85 hours of personal study.

-5 hours of examination, corresponding to the global written test, the date of which will be set by the Faculty of Sciences.

5. Assessment system

The student must demonstrate that they has achieved the expected learning results through the following assessment activities:

Written test during the global assessment periods that will consist of

questions and theoretical-practical issues where the student must apply the theory to specific cases and examples (grade 1) and delivery of the problems and practical cases proposed during the development of the subject as well as class participation (grade 2).

The final grade for the subject will be the best of the grades obtained by the student between two alternative formulas:

Formula 1: Final grade= $0.8 \cdot \text{grade 1} + 0.2 \cdot \text{grade 2}$

Formula 2: Final grade= grade 1