27115 - Chemical Engineering

Información del Plan Docente

Academic Year	2018/19
Subject	27115 - Chemical Engineering
Faculty / School	100 - Facultad de Ciencias
Degree	446 - Degree in Biotechnology
ECTS	9.0
Year	3
Semester	Annual
Subject Type	Compulsory
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

Basic courses on Mathematics and Physical-Chemistry are necessary.

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, autonomous work and study, tutorials and assessment tasks.

Students are expected to participate actively in class throughout the semester.

27115 - Chemical Engineering

Further information regarding the course will be provided on the first day of class.

4.2.Learning tasks

The course includes the following learning tasks:

- Lectures. Mainly participative lectures in which the basic concepts of the matter and examples will be explained.
- Practice sessions. In which the participation of the students will be the principal issue.
- Autonomous work and study.
- Assessment tasks.
- Tutorials.

4.3.Syllabus

The course will address the following topics:

- Topic 1- Mass and energy balances. Mass balances and atomic balances. Steady and unsteady state. Recirculation and purge.
- Topic 2. Introduction to transport phenomena. Transport equations. Transport inside a fluid. Transport between phases. Application to mass transfer in fermentation reactors.
- Topic 3. Heat transfer. Mechanisms for heat transfer. Heat transfer in solids. Design of equipments for heat transfer.
- Topic 4. Transport of fluids. Bernouilli equation. Pressure drop in pipes. Pumps.
- Topic 5. Introduction to Separation Units. Types of contact. Design of equipment for contact by stages.
- Topic 6. Liquid-liquid extraction. Principles. Types of equipments. Design of equipment by stages.
- Topic 7. Other separation units: lixiviation, filtration and separation with membranes.
- Topic 8. Introduction to Chemical Reaction Engineering. Classification of ideal reactors. Design of ideal reactors for simple and homogeneous reactions.

4.4.Course planning and calendar

Schedules of lectures and problems will coincide with the officially established and will be available at: https://ciencias.unizar.es/grado-en-biotecnologia.

The places, calendar and groups for training and practical sessions will be established in coordination with the rest of the subjects at the beginning of course. The Coordinator will produce the groups of students for these activities at beginning of course to avoid overlaps with other subjects.

For students enrolled in the subject, places, times and dates of lectures and practical sessions will be public via Bulletin Board advertisements of the grade on the platform Moodle at the University of Zaragoza, https://moodle2.unizar.es/add/, and in the moodle page for the course. These routes will be also used to communicate enrolled students their distribution by groups of practical sessions, which will be organized by the coordination of degree. Provisional dates will be available on the website of the Faculty of Sciences in the corresponding section of the Degree in Biotechnology:https://ciencias.unizar.es/grado-en-biotecnologia.

In this web there will be also available the dates of exams.

4.5.Bibliography and recommended resources