Universidad Zaragoza

Academic Year/course: 2024/25

66217 - The Research Process in Chemical Engineering

Syllabus Information

Academic year: 2024/25
Subject: 66217 - The Research Process in Chemical Engineering
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 531 - Master's in Chemical Engineering
ECTS: 4.5
Year: 1
Semester: Second semester
Subject type: Compulsory
Module:

1. General information

The subject provides adequate training for those students who may consider pursuing a research career, either in a public organization or in a company. Therefore, what can be considered different stages of the research process have been addressed: knowledge of the existing scientific literature, knowledge of the sources of financing, both national and international, being able to carry out an effective design of experiments and to adequately interpret the experimental data, being able to make an oral or written presentation of the results, knowing the mechanisms for technology transfer to companies, as well as the procedures for the protection of intellectual property.

2. Learning results

- To know how to search for information on a topic of interest in the usual sources of scientific information.
- To propose research projects and select the appropriate calls for proposals to obtain funding for these projects.
- To apply appropriate methods for the preparation of reports, publications and presentations.
- To know the procedures to file patents and transfer research results to companies.
- To learn about national and university entrepreneurship programs, as well as the mechanisms that motivate the creation of start-up companies
- To know how to interpret the presence of random errors in the results obtained both in laboratory experiments and in industrial practice.
- To know how to calculate and interpret the most common statistical parameters when dealing with experimental results
- To design experimental strategies based on 2k designs and interpret the results obtained

3. Syllabus

Topic 1.- Search for information

Topic 2.- Research funding

Topic 3. Descriptive statistics

Topic 4. Design and analysis of experiments

Topic 5. Regression analysis

Topic 6. Dissemination of research and transfer of results

Topic 7. Technology transfer. Intellectual property protection. Patents.

Topic 8. Creation of technology-based companies. Spin-off. Start-up. University entrepreneurship programs

4. Academic activities

Master classes (15 h). In them, the theory of the different proposed topics will be explained.

Practical classes(30 h). In these classes, practical cases will be solved by the student under the supervision of the teacher.

Tutored works (18 hours) individually or in groups.

Individual study (45 hours). The student is advised to study continuously throughout the semester. This includes tutoring hours.

Assessment tests (4.5 h)

5. Assessment system

Option 1: This option includes:

Written test . 70% of the final grade. A minimum grade of 5 is required to pass the subject.

Tutored works Several assignments will be proposed throughout the semester. 30% of the final grade.

Option 2:

Those students who do not want to follow the evaluation according to option 1 can choose to take the official call exam (100% of the final grade).

6. Sustainable Development Goals

4 - Quality Education
9 - Industry, Innovation and Infrastructure