Universidad Zaragoza

Academic Year/course: 2023/24

29942 - Fluid Facilities Design

Syllabus Information

Academic year: 2023/24
Subject: 29942 - Fluid Facilities Design
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 435 - Bachelor's Degree in Chemical Engineering
ECTS: 6.0
Year: 4
Semester: Second semester
Subject type: Optional
Module:

1. General information

The student is expected to understand the fundamental concepts of industrial installations from the point of view of fluids, such as piping, multiphase flows and instrumentation. Therefore, it provides you with key knowledge for the development of your future professional activity.

These approaches and goals are aligned with some of the Sustainable Development Goals, SDGs, of the Agenda 2030 (https://www.un.org/sustainabledevelopment/es/) : objective 6.4, objective 8.2 and objective 9.5.

2. Learning results

(RA1) Know the constituent elements of a piping system and the associated regulations.

(RA2) Know and apply methods of layout and hydraulic and mechanical design of fluid distribution networks.

(RA3) Knows the basic characterization of solids and their conditioning for the chemical industry.

(RA4) Know the main characteristics of the equipment used in the different operations with solids as well as the influence of the main variables on their operation

3. Syllabus

1. Flow, temperature, pressure and level instrumentation.
2. Multiphase flow dynamics. Particle transport and separation.
3. Piping technology. Materials, instrumentation, accessories, measurements, regulations. Graphical representation.
4. Piping layout design according to process and equipment.
5. Analysis of the flexibility and support of the piping layout.
6. Inspections and tests. Construction and start-up.

4. Academic activities

Lectures (30 h) where the theory of the different topics that have been proposed will be taught.

Problems and cases (20 h). In these classes, problems will be solved by the student under the supervision of the teacher. The problems or cases will be related to the theoretical part explained in the lectures.

Laboratory practices (10 h) where the student will consolidate the contents developed in the lectures.

Tutored work (30 hours of non face-to-face group work). Several activities will be proposed and supervised by the teachers.

Individual study (57 non face-to-face hours). It is recommended that the student carry out individual study on a continuous basis throughout the semester.

5. Assessment system

Option 1: Continuous assessment:

- Carrying out supervised work. The deliverables corresponding to tutored work will be graded valuing its content, the understanding of the concepts demonstrated in them and the correct presentation (learning results involved): RA1, RA2, RA3 and RA4).
- Performance of a laboratory internship. The development of the practices in the laboratory and the presentation and interpretation of the results will be valued. (learning results involved): RA1, RA2, RA3 and RA4).
  The grade for the subject will be calculated according to the following formula:
    - Grade = 0.4*proctored work + 0.2*laboratory practice + 0.4*class participation.

- The instrumentation and multiphase part accounts for 40% and the piping part for 60%.

Option 2:

Those students who do not wish to follow the assessment of option 1, may choose to take the test at (100% of the final grade). This test will consist of problem solving (learning results involved: RA1, RA2, RA3 and RA4).