

29923 - Fluid Technics

Syllabus Information

Academic year: 2023/24

Subject: 29923 - Fluid Technics

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 435 - Bachelor's Degree in Chemical Engineering

ECTS: 6.0

Year: 3

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The goal of this subject is to provide the student with the necessary skills in relation to the analysis and design of fluid transport and distribution installations. The subject introduces both the concepts and general laws governing the operation of fluid machines and installations and the analysis and calculation procedures necessary to address specific configurations and designs. In this way, it is intended that the student acquires a solid training that will allow him/her to face the enormous variety of applications and configurations of fluid impulsion installations that can be found in the different fields of Chemical Engineering.

These approaches and goals are aligned with Sustainable Development Goals 6, 7 and 9, SDGs, of the Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>) and in particular with objectives 6.4, 7.3 and 9.4.

2. Learning results

- Understand and be able to apply the general principles of energy conservation in fluid power installations fluids
- Understand the operation and applications of fluid machines
- Ability to size a fluid machine subjected to general technical specifications Be able to size and analyze the operation of fluid installations
- Know the methods of regulation of fluid installations and have the ability to carry out their analysis and design

3. Syllabus

Introduction to fluid installations

2. Energy balances in fluid installations

3. Pressure losses

4. Fundamentals of hydraulic turbomachines

5. Turbomachines: Pumps and fans

6. Positive displacement pumps

7. Pumping and ventilation systems

8. Regulation of fluid installations

4. Academic activities

- **Master classes:** 30 hours
- **Problem solving and case studies:** 24 hours
- **Simulation seminars:** 6 hours
- **Teaching assignments:** 24 hours
- **Study and personal work:** 60 hours
- **Assessment tests.** 6 hours

5. Assessment system

The student must demonstrate that he/she has achieved the intended learning results through the following assessment activities:

Option 1:

The final grade of the subject will be calculated as the arithmetic mean of the grades obtained in the two mid-term exams of the subject:

- Midterm Exam 1: Global written test to be held in the middle of the term, aimed at assess the knowledge acquired in

the first part of the subject. . It will consist of a part of short questions and another part of numerical resolution problems.

- Midterm Exam 2: Written test, of the same type as the Midterm Exam 1, in which the second part of the contents of the subject will be assessed. This test will take place simultaneously to the Global test of the subject (see Option 2), scheduled by the center within the first call.

This Option 1 will only be available for the first call. In the second round, the assessment will be carried out through the Global Examination described in Option 2.

In the first call, the choice between options 1 and 2 can be made at any time, up to the same day of holding the Global Examination of the first call. Even in the case that Midterm Exam 1 has been taken, it is possible to waive this grade and take the Global test described in Option 2, in which case 100% of the grade will come from this Global Test.

Option 2:

Global Examination of the subject, to be held on the dates scheduled by the center for the first or second call, as appropriate. It will consist of a written test, covering the entire syllabus taught in the subject, and will include a part of short questions and another part of numerical resolution problems.