

28829 - Fluid Mechanics: Systems and Machines

Información del Plan Docente

Academic Year	2018/19
Subject	28829 - Fluid Mechanics: Systems and Machines
Faculty / School	175 - Escuela Universitaria Politécnica de La Almunia
Degree	424 - Bachelor's Degree in Mechatronic Engineering
ECTS	6.0
Year	3
Semester	Second semester
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

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

1 Theory Classes: The theoretical concepts of the subject are explained and illustrative examples are developed as support to the theory when necessary, focus on calculation of installation ,the characteristic curves of pumps / fans / turbines and the calculation and development of industrial applications based on Hydraulic and pneumatic systems

2. Laboratory Workshop. These classes are highly recommended for a better understanding of the concepts because those items whose calculation is done in theory classes are shown in working mode.

3. Tutorials related to any concept of the subject. This activity is developed in a presencial mode with a defined schedule or through the messaging and forum of the virtual classroom Moodle.

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4.2.Learning tasks

Theory Classes. it will take 4 hours per week till the 40 hours, necessary to accomplish the objectives of the subject study, will be reached

Laboratory Workshop. it will take 10 seasons of 2 hours duration. The group is divided up into various groups, according to the laboratory capacity.

Study and personal work. This non-presential part is valued in about 90 hours, necessary for the study of theory, problem solving and revision of documents

Individual tutorials. Each teacher will publish a schedule of attention to the students throughout the four-month period

4.3.Syllabus

Topic 1. Fluid machines Classification, Euler equation, Momentum theorem, Triangle speeds, Classification of hydraulic pumps.

Topic 2. Rotodynamic pumps, Similarity relations, The impeller, Yield and Power, Characteristic curves, Applications in industrial systems.

Topic 3. Fans and hydraulic turbines, Definition and classification. Action and Reaction turbines, Net height. Losses, yield and power, Applications in industrial systems...

Topic 4. Study Pneumatic-hydraulic components, Design techniques of hydraulic and pneumatic circuits, Calculation of the installation and its elements, Transmissions and hydraulic and pneumatic controls, Interpretation of phase diagrams in the study sequences, Control schemes, automatic wiring, Applications in the design, optimization and maintenance of circuits.

Topic 5. Final project on practical application

4.4.Course planning and calendar

The theory classes and problems are given in the timetable established by the center, as well as the hours assigned to the practices.

The presentation of the works will be done on the last day of class of the subject.

4.5.Bibliography and recommended resources