66428 - Hydraulic and Wind Power Stations

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	536 - Master's in Mechanical Engineering
ECTS	4.5
Course	1
Period	Second semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process of the course will be based on the following items:

- Lectures, where the basic principles of the theory will be given.
- Practical applications, where the theory will be applied to problem-solving examples
- Mini-projects, where the students, either individually or in groups, will apply the acquired knowledge to real engineering cases
- Tutorial hours

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5.2.Learning activities

The course will be based on lectures, seminars, practical application of the theory and various mini-projects based on the course contents.

5.3.Program

Part I. Hydraulic power stations

a. Hydrology

b. Hydraulic resources. Power production.

c. Hydraulic conduits of the power station.

d. Operation of water turbines and auxiliar equipment.

Part 2: Wind power stations

a. Introduction.

b. Characterization of the wind resource.

c. The wind turbine and electric generator.

d. Equipment for wind farms.

5.4.Planning and scheduling

The lectures and lab sessions will be given within the timetable of the Engineering School.

The professor will make available his tutorial hours at the beginning of the semester.

5.5.Bibliography and recomended resources

- J.F. Sanz. Energías renovables: Energía hidroeléctrica, Prensas Universitarias de Zaragoza, 2008.
- L. Cuesta, E. Vallarino. Aprovechamientos hidroléctrico, Colegio de Ingenieros de Caminos, Canales y Puertos, 2000.
- D. Le Gouriéres. Wind Turbines , Eyrolles, 1982.