66428 - Hydraulic and Wind Power Stations

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	536 - Master's in Mechanical Engineering
ECTS	4.5
Year	1
Semester	Second semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as

- Lectures, where the basic principles of the theory will be given.
- Practice sessions, where the theory will be applied to problems.
- Mini-projects, where the students, either individually or in groups, will apply the acquired knowledge to real

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engineering cases.
- Tutorials.

5.2.Learning tasks

The course includes the following learning tasks:

- Lectures,
- Seminars,
- Practice sessions of the theory and
- Various mini-projects based on the course contents.

5.3.Syllabus

The course will address the following topics:

Section I. Hydraulic power stations

1. Hydrology.
2. Hydraulic resources. Power production.
3. Hydraulic conduits of the power station.
4. Operation of water turbines and auxiliar equipment.

Section 2: Wind power stations

1. Introduction.
2. Characterization of the wind resource.
3. The wind turbine and electric generator.
4. Equipment for wind farms.

5.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

5.5.Bibliography and recommended 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.