Universidad Zaragoza

Academic Year/course: 2021/22

66333 - Hydraulic and wind energy

Syllabus Information

Academic Year: 2021/22
Subject: 66333 - Hydraulic and wind energy
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 330 - Complementos de formación Máster/Doctorado
535 - Master's in Renewable Energies and Energy Efficiency
ECTS: 6.0
Year: 330 - Complementos de formación Máster/Doctorado: XX
535 - Master's in Renewable Energies and Energy Efficiency: 1

Semester: First semester
Subject Type: 535 - Compulsory
330 - ENG/Complementos de Formación
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The development of this course is structured into three main activities: theory sessions, practice sessions and the possibility of an essay.

In the theory sessions the basic concepts are explained and related to the technical characteristics of the process using short exercises which will be solved in the blackboard as a support to fix the compression of the concepts.

The practice sessions combine laboratory experiments with computer exercises to study practical examples more complex than the exercises explained in the blackboard, for whose solution some significant calculations are necessary. Moreover, there is the possibility that students will visit some installations to see the application of the theoretical concepts and the simulation exercises in the computer sessions.

4.2. Learning tasks

The course includes the following learning tasks:

- A01 Lectures (30 hours). Presentation of theoretical contents by a faculty or by external experts to all students enrolled in the course. Although it is not a mandatory activity, regular attendance is highly recommended.
- A02 Problem and case solving (15 hours). Solve practical problems and exercises with all the students. Although it is not a mandatory activity, regular attendance is highly recommended.
- A03 Laboratory sessions (15 hours). Students will work actively in groups to solve practical exercises.
- A06 Guided assignments (24 hours). Students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures.
- A07 Autonomous work (60 hours). Students are expected to spend about 60 hours to study theory, solve problems

and prepare lab sessions
- A08 Assessment (6 hours).

The indicated hours are for guidance and will be adjusted depending on the academic calendar.
At the beginning of the course, lecturers will communicate the schedule of practice sessions, which will be set according to the syllabus and the availability of laboratories and computer rooms.

4.3. Syllabus

The proposed syllabus for this subject is as follows. The order of teaching will depend on the teachers assigned.

Hydraulic part:

Basic aspects of hydroelectric generation.
Hydraulic concepts and civil works.
Electromechanical equipment
Design, installation, operation and maintenance.
Economic feasibility analysis of the wind and hydraulic installations: fundamental aspects.

Wind part:

Basic aspects
Wind resource.
Wind turbines
Construction of wind farms.
Operation and maintenance. Economic aspects.
Integration with other energy sources

Common part:

Substations

4.4. Course planning and calendar

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

4.5. Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=66333&year=2019