

Renewable Energy Projects

Academic Year: (2022 / 2023)

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Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: ALONSO-MARTINEZ DE LAS MORENAS, JAIME

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Wind power generation systems

OBJECTIVES

CB6 Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context

CB7 That students know how to apply the acquired knowledge and their ability to solve problems in new or little-known environments within broader (or multidisciplinary) contexts related to their area of study

CB8 That students are capable of integrating knowledge and facing the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments

CB9 That students know how to communicate their conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way

CB10 That students possess the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

- Acquire adequate knowledge of industrial management of renewable energy projects and companies.
- Project, calculate and design renewable energy products, processes, facilities and plants.
- Lead, plan and supervise multidisciplinary teams that design or execute renewable energy projects.
- Carry out research, development and innovation in products, processes and methods in relation to renewable energies.
- Design capacity of plants producing electricity from renewable energies,
- Carry out strategic planning and apply it to renewable energy systems.
- Ability to evaluate renewable energy resources in a given location, as well as to determine the environmental impact of renewable energy projects.
- Technically and economically manage projects, facilities, plants, companies and technology centers related to renewable energies.
- Knowledge of the regulations that directly affect the use of renewable energies worldwide, as well as their origin, their validity and their application.
- Knowledge of the supply quality criteria and the ability to project and have sufficient means to comply with them.
- Knowledge about the evaluation of the wind resource
- Ability to assess the viability and manage renewable energy projects and companies.

DESCRIPTION OF CONTENTS: PROGRAMME

- Overview: the wind farm project
- The Site pre-selection
- The characterization of wind resource: Fundamentals, measurements, analysis, modelling and production estimation
- The identification of project technical constraints
- The processing of the electrical connection
- The electrical configuration of the wind farm and its connection

- Development of project engineering
- The environmental processing
- The selection of technology. Procurement process
- Construction of wind farm
- Operation and Maintenance

LEARNING ACTIVITIES AND METHODOLOGY

The assessment method will consist of lectures and presentation by students of the proposed works.

The lectures are given by professionals, specialists in renewable plant project development.

In addition, students must complete a stage of a wind farm project and the results of this task must be presented and defended in class. In this way, it is intended to promote the student participation in the class and evaluate their ability to carry out a wind farm project.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	15
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% of continuous assessment (assignments, laboratory, practicals...):	85
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The assessment system consists of a continuous evaluation based on the development of projects and a final exam with questions about the subject programme.

BASIC BIBLIOGRAPHY

- J.L.Rodríguez Amenedo, J.C. Burgos Díaz, S. Arnalte Gómez. Sistema Eólicos de producción de Energía Eléctrica, Rueda, 2003