

Academic Year: (2020 / 2021)

Review date: 16-12-2020

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: ALONSO MARTINEZ, MONICA

Type: Electives ECTS Credits : 6.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The students should have previous knowledge of power systems engineering: circuit theory, electrical machines, load flow, short circuits and power system stability to follow this subjects.

Otherwise, they should course Electrical systems and equipment.

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 electrical engineering and areas that have application here.
- Ability to determine what technologies exist for electric vehicles and what is their planned development.
- Ability to determine the requirements of the distribution networks for the integration of electric vehicles and the operation of the networks, taking into account the interaction of these devices with the generation-demand balance.
- Acquisition of energy efficiency principles, linked to electrical energy.
- Ability to determine the energy efficiency of different industrial and domestic facilities.
- Ability to determine the most convenient measures to improve the energy efficiency of facilities.
- Ability to select the most suitable renewable generation for a given installation.
- Acquisition of skills to search for complex and specific information on regulations and legislation, on issues related to renewable energy and energy efficiency.

DESCRIPTION OF CONTENTS: PROGRAMME

- Introduction to energy efficiency. Regulatory framework.
- Energy efficiency in transport. Regulatory framework.
 - * Electric vehicles, hydrogen and others. Description of the technology. Regulatory framework.
 - * Electric vehicles technologies. Batteries and charging modes. VE simulation.
 - * Electric vehicles on distribution networks and generation-demand balance.
- Efficiency energética in edificación. Regulatory framework.
 - * Energy efficiency in different technologies (lighting, air conditioning, etc.).
 - * Integration of renewable energies in consumer facilities.
 - * Energy Audits. Improvements in energy efficiency.
- Energy efficiency in the industrial sector.

LEARNING ACTIVITIES AND METHODOLOGY

- Theory sessions where the basic knowledge will be presented. Most of these sessions will be given by professionals with practical experience in efficiency business and electrical sector.
- Lab computer sessions.

- Oral group presentations.
- Visits to pilot instalations.

ASSESSMENT SYSTEM

Continuous evaluation: parcial exam and homework 100%

Ordinary exam without continuous evaluation 100%

Extraordinary exam 100%

% end-of-term-examination:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

BASIC BIBLIOGRAPHY

- IDAE Plan de energías renovables (PER) 2011-2020, IDAE, 2011
- IDAE Plan de Ahorro y Eficiencia Energética 2011-2020. 2º Plan de Acción Nacional de Eficiencia Energética de España, IDAE , 2011
- R. García Valle, J.A. Peças Lopes (Eds.) Electric Vehicle Integration into Modern Power Networks, Springer, 2013