

Academic Year: (2023 / 2024)

Review date: 07-06-2023

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

The general objective of the course is to provide students with the basic knowledge of energy efficiency and new forms of sustainable mobility.

The specific objectives are:

- That students acquire knowledge of energy efficiency in the electricity generation sector,
- That students learn the different technologies used to improve energy efficiency in the residential sector: generation technologies, lighting efficiency, air conditioning, etc.,
- Know the existing technologies on the market in terms of sustainable mobility as well as the planned development: electric, hybrid, hydrogen, etc.
- 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.

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.
 - * Electric vehicles on distribution networks and generation-demand balance.
- Efficiency energética in edificación. Regulatory framework.
 - * Energy efficiency in different technologies (lighting, air conditioning, etc.).
 - * Improvements in energy efficiency. Self-consumption

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: class participation, presentations, partial 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