

Academic Year: ( 2019 / 2020 )

Review date: 03-05-2020

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: ALONSO MARTINEZ, MONICA

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 2

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

-Electrical Equipment and Systems

**OBJECTIVES**

This subject acquires adequate knowledge of electrical engineering and areas that have application here.

Students who pass this subject will be able to:

- Understand the principles of smart grids and the integration of renewable energy sources into active distribution networks.
- Know the infrastructure of electrical and communications networks: Power electronics, electrical storage systems.
- Knowledge of the techniques of operation and control of active networks: Stability, frequency-power control, voltage control, state estimation.
- Knowledge of AMR automation and measurement systems in smart grids.
- To know the measures of demand management and management of active distribution networks.

**DESCRIPTION OF CONTENTS: PROGRAMME**

- 1.- Introduction.
- 2.- Distributed energy resources: storage facilities and electrical vehicle.
- 3.- Smart grid management: state estimation, voltage control, demand management.
- 4.- Micro grids management.
- 5.- Automation in Smart grids.
- 6.- Smart grids lab.
- 5.- Demonstration Projects and Deployment

**LEARNING ACTIVITIES AND METHODOLOGY**

Lecturer classes and Practical exercises in the laboratory.

Lecturer classes are taught by Professors from Universidad Carlos III de Madrid and professional experts with experience in the industrial field.

**ASSESSMENT SYSTEM**

Ordinary evaluation:

100% practical work

Extraordinary evaluation:

100% practical work

<b>% end-of-term-examination:</b>	0
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	10

#### BASIC BIBLIOGRAPHY

- M. Bollen The Smart Grid. Adoption the Power System to New Challenges, Morgan & Claypool Publishers, 2011