

Academic Year: ( 2024 / 2025 )

Review date: 26-04-2024

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: ALONSO MARTINEZ, MONICA

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

## OBJECTIVES

### BASIC SKILLS

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

CB8 That students can integrate knowledge and face 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.

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

### GENERAL COMPETENCES

CG8 Capacity for continuous, self-directed and autonomous learning.

### SPECIFIC COMPETENCES

CE1 Ability to program in the development of digital systems, understanding the component and program as integral elements of a product.

### LEARNING RESULTS

- \* Identify the main technological components in Smart Grids.
- \* Ability to design the energy installations at IoT systems.
- \* Ability for big data management in Smart Grids.

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Digital transformation of power grids: concepts, current situation, challenges and trends
2. Power systems and smart grids
3. Automation in substations
4. Monitoring
5. Distributed energy resources
6. Event vulnerability
7. Laboratory practices

## ASSESSMENT SYSTEM

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

### ASSESSMENT SYSTEMS OF THE STUDY PLAN REFERRED TO SUBJECTS

SE1 Participation in class (10%)

SE2 Realization of lab sessions (80%)

SE3 Realization of a works and expositions (10%)

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

#### BASIC BIBLIOGRAPHY

- Janaka B. Ekanayake , Nick Jenkins , Kithsiri Liyanage, Jianzhong Wu , Akihiko Yokoyama Smart Grid: Technology and Applications, Wiley-Blackwell, 2012
- Lisa Lamont , Ali Sayigh Application of Smart Grid Technologies: Case Studies in Saving Electricity in Different Parts of the World, Academic Press, 2018

#### ADDITIONAL BIBLIOGRAPHY

- Oguah, Samuel ; Chattopadhyay, Debabrata Mapping Smart-Grid Modernization in Power Distribution Systems, World Bank, Washington, DC, 2015