IoT in the Energy Industry

Academic Year: (2021 / 2022)   **Review date: 31-08-2021**

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: ANTOLIN ARIAS, MANUEL

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
3. Automation in substations
4. Power and energy
5. Smart grids
6. Electric vehicle
7. Renewable Energy Control Center
8. Laboratory practices.

ASSESSMENT SYSTEM

ASSESSMENT SYSTEMS OF THE STUDY PLAN REFERRED TO SUBJECTS
SE1 Participation in class (10%)
SE2 Realization of two practices (20%)
SE3 Realization of a work, in group, on Smart Grids and energy installation in IoT Systems

% end-of-term-examination: 0

% of continuous assessment (assigments, laboratory, practicals…):   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