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5G and Wireless Networking

Academic Year: (2021 / 2022)   **Review date: 08-09-2020**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: SERRANO YAÑEZ-MINGOT, PABLO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

OBJECTIVES

BASIC COMPETENCES

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 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 are able to integrate knowledge and face the complexity of making 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 sustain them to specialized and non-specialized audiences in a clear and unambiguous way

GENERAL COMPETENCES

CG3   Capacity to develop basic distributed applications for the transport, storage and management of information.

CG5 Capacity for basic analysis of the requirements for information management and treatment of large volumes of data.

SPECIFIC COMPETENCES

CE5   Ability to know and understand the structure of networks and protocols involved in distributed applications and IoT / M2M environments

CE6   Ability to design and control some next-generation wireless networks in industrial applications

CE7   Ability to apply the communication of devices, both among them and globally, in the environment of Connected Industry 4.0

LEARNING RESULTS

After completing this SUBJECT MATTER, the student will be able to_

- Design a communications network adapted to the productive needs of the factories and services.
- Design, manage and use wireless communications networks in industrial, non-industrial, urban and rural environments, including 5G.
- Manage Cloud / Edge distributed computing technologies and the implementation of applications based on virtual reality.
- Manage augmented reality technology for the design and implementation of distributed applications in the context of Industry 4.0 by collecting information from different data sources.
- Adopt solutions for intelligent operations based on the integration of augmented reality systems, visual and / or acoustic recognition, natural language and data flows from "industrial data lakes".

DESCRIPTION OF CONTENTS: PROGRAMME

Common themes of the subjects:
- Connection of industrial elements, robots, machines, etc. to the network
- Wireless networks engineering
- Properties and trade-offs in the design of wireless access technologies
- Distributed computing and industrial networked applications
- Transport and application protocols for limited devices

Specific themes of the subjects:

5G and wireless networking:
- Principles of wireless networking and connected industry
- WLAN standards
- 5G in IoT and industry
- Wireless network design
- New access and core technologies for 5G

% end-of-term-examination: 60

% of continuous assessment (assigments, laboratory, practicals…):   40