

Academic Year: (2020 / 2021)

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Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: AMESCUA SECO, ANTONIO DE

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 2

OBJECTIVES

BASIC SKILLS

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

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

That students know how to communicate their conclusions and the latest knowledge and reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.

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

GENERAL COMPETENCES

Ability to project, calculate and design products, processes and facilities in all areas of Computer Engineering.

Ability to manage works and installations of computer systems, complying with current regulations, ensuring quality of service.

Ability for mathematical modeling, calculation and simulation in technology and business engineering centers, particularly in research, development and innovation tasks in all fields related to Computer Engineering and related multidisciplinary fields.

Ability to start, direct and manage the manufacturing processes of computer equipment, guaranteeing safety for people and goods, the final quality of the products and their approval.

Ability to apply acquired knowledge and solve problems in new or little-known environments within broader and multidisciplinary contexts, with the ability to integrate knowledge.

Ability to know how to communicate (orally and in writing) the conclusions - and the ultimate knowledge and reasons that support them - to specialized and non-specialized audiences in a clear and unambiguous way.

Ability for continuous, self-directed and autonomous learning.

SPECIFIC COMPETENCES

Ability to integrate technologies, applications, services and systems typical of Computer Engineering, with a general character, and in broader and multidisciplinary contexts.

Ability to model, design, define architecture, implement, manage, operate, administer and maintain applications, networks, systems, services and computer content.

Ability to understand and know how to apply the operation and organization of the Internet, new generation network technologies and protocols, component models, intermediary software and services.

Ability to design, develop, manage and evaluate certification and security guarantee mechanisms in the treatment and access to information in a local or distributed processing system.

Ability to analyze the information needs that arise in an environment and carry out at all stages the process of building an information system.

Ability to design and evaluate operating systems and servers, and applications and systems based on distributed computing.

Ability to understand and apply advanced knowledge of high performance computing and numerical or computational methods to engineering problems.

Ability to design and develop computer systems, applications and services in embedded and ubiquitous systems.

DESCRIPTION OF CONTENTS: PROGRAMME

- 1.- Introduction to Software Engineering For IoT
 - 1.1.- Application Areas and practical Applications using IoT
 - 1.2.- Principles of Software Systems Design for IoT
 - 1.3.- Reference Architectures in IoT
- 2.- Key technologies for IoT
 - 2.1.- Internet of Things Devices, End to End
 - 2.2.- Communications in IoT
 - 2.3.- Securization in IoT
 - 2.4.- Data Architecture for IoT
- 3.- Development and deployment process for IoT
 - 3.1.- Frameworks
 - 3.2.- Development process for IoT
 - 3.3.- Deployment for IoT
 - 3.4.- Integration and Continuous Delivery

LEARNING ACTIVITIES AND METHODOLOGY

FORMATIVE ACTIVITIES

Theoretical class
Practical classes
Laboratory practices
Tutoring
Team work
Individual student work
Partial and final exams

TEACHING METHODOLOGIES

Presentations in the teacher's class with computer and audiovisual media support, in which the main concepts of the subject are developed and the bibliography is provided to complement the learning of the students.
Critical reading of texts recommended by the teacher of the subject:
Press articles, reports, manuals and / or academic articles, either for later discussion in class, or to expand and consolidate the knowledge of the subject.
Resolution of practical cases, problems, etc. ¿raised by the teacher individually or in groups
Exhibition and discussion in class, under the teacher's moderation of topics related to the content of the subject, as well as practical cases
Preparation of works and reports individually or in groups

ASSESSMENT SYSTEM

% end-of-term-examination/test:	30
% of continuous assessment (assignments, laboratory, practicals...):	70
Class participation	
Individual or group work carried out during the course	
Final exam	

BASIC BIBLIOGRAPHY

- Amita Kapoor Hands-On Artificial Intelligence for IoT: Expert machine learning and deep learning techniques for developing smarter IoT systems, Packt Publishing, 2019
- Dirk Slama, Frank Puhlmann, Jim Morrish, Rishi M Bhatnagar Enterprise IoT: Strategies and Best Practices for Connected Products and Services, O'Reilly Media, 2015

- Giacomo Veneri Hands-On Industrial Internet of Things: Create a powerful Industrial IoT infrastructure using Industry 4.0, Packt Publishing, 2018
- Perry Lea Internet of Things for Architects: Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security, Packt Publishing, 2018
- Qusay F. Hassan Internet of Things A to Z: Technologies and Applications, Wiley-IEEE Press, 2018