

Academic Year: ( 2023 / 2024 )

Review date: 19-05-2023

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: LARRABEITI LOPEZ, DAVID

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
- 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**

- CG4 Knowledge and understanding of the management principles applicable to productive and service environments.
- CG5 Capacity for basic analysis of the requirements for information management and treatment of large volumes of data.

**SPECIFIC COMPETENCES**

- CE9 Ability to identify computer security requirements in connected industry environments

**LEARNING RESULTS**

As a result of the learning the student will be able to:

- Configure secure transport protocols,
- Know the technologies to mitigate threats and protect data in networked systems.

**DESCRIPTION OF CONTENTS: PROGRAMME**

- the cybersecurity problem of CI4.0
- Cryptography concepts: definitions, security services, symmetric key and public/private key encryption. Authentication. Hashing.
- Secure end-to-end transport protocols
- Cybersecurity threats in CI4.0: malware types. Structure, components and attack vectors.
- Techniques and technologies for mitigating threats: attacks and counter-measurements. Firewalls, IDS and SIEMs.
- Data protection in networked systems: security in IP. IPsec. VPNs.
- Security in wireless communications.

**LEARNING ACTIVITIES AND METHODOLOGY****LEARNING ACTIVITIES OF THE SYLLABUS REFERRED TO MATTERS**

- AF1 Theory class
- AF2 Practical classes
- AF4 Laboratory session
- AF5 Supervision sessions
- AF6 Group work
- AF7 Individual work by student
- AF8 Mid-term and final exam

| Code activity | Num Hours | Class Hours | % estudiante |
|---------------|-----------|-------------|--------------|
| AF1           | 36        | 36          | 100          |
| AF2           | 18        | 18          | 100          |
| AF4           | 9         | 9           | 100          |

|              |     |    |     |
|--------------|-----|----|-----|
| AF5          | 6   | 6  | 100 |
| AF6          | 75  | 0  | 0   |
| AF7          | 75  | 0  | 0   |
| AF8          | 6   | 6  | 100 |
| TOTAL MATTER | 225 | 75 | 33% |

#### TEACHING METHODOLOGIES RELATED TO MATTERS

MD1 Class presentations supported by computing and audiovisual media, where the main matter concepts are developed and the bibliography to complement the students' learning is provided

MD2 Critical lectures of texts recommended by the professor: articles, reports, manuals and research papers.

MD3 Solving of practical use cases, problems, etc posed by the teacher to individuals or groups.

MD4 Presentation and discussion in class, under the professor supervision of topics related to the matter, as well as several practical use cases.

#### ASSESSMENT SYSTEM

##### ASSESSMENT OF THE SYLLABUS LINKED TO MATTERS

SE1 Class participation

SE2 Individual or group works

SE3 Final exam

##### Assessment

| Systems | minimal weight (%) | maximum weight (%) |
|---------|--------------------|--------------------|
| SE1     | 0                  | 20                 |
| SE2     | 20                 | 40                 |
| SE3     | 40                 | 60                 |

**% end-of-term-examination:** 60

**% of continuous assessment (assignments, laboratory, practicals...):** 40

#### BASIC BIBLIOGRAPHY

- Aditya Gupta The IoT Hacker's Handbook: A Practical Guide to Hacking the Internet of Things, Apress, 2019
- William Stallings Cryptography and Network Security: Principles and Practice. , Prentice Hall, 2013