

Academic Year: ( 2024 / 2025 )

Review date: 20-01-2025

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: ESTEVEZ AYRES, IRIA MANUELA

Type: Electives ECTS Credits : 3.0

Year : Semester :

## REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Systems programming  
Systems architecture

## SKILLS AND LEARNING OUTCOMES

CB1: Students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study

CB2: Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.

CG1: Ability to write, develop and sign projects in the area of telecommunications engineering aimed at the design, development and utilization of telecommunications and electronic networks, services and applications, in accordance with the competences acquired in the degree program, as set out in Section 5 of the corresponding mandate.

ECRT2: Ability to use communication and IT applications (office technology, databases, advanced calculus, project management, project visualization, etc.) to support electronic and telecommunications development and utilization.

ECRT7: Knowledge and use of the fundamentals of programming in telecommunication networks, systems and services.

ETEGT1: Ability to construct, develop and manage telecommunication networks, services, processes and applications, such as systems for capture, transport, representation, processing, storage, multimedia information presentation and management, from the point of view of telematics systems.

ETEGT2: Capacity to apply techniques on which telematics networks, services and applications are based. These include systems for management, signaling and switching, routing, security (cryptographic protocols, tunneling, firewalls, payment mechanisms, authentication and content protection), traffic engineering (graph theory, queuing theory and tele-traffic). tariffication and service reliability and quality, in fixed, mobile, personal, local or long distance environments, with different bandwidths, including telephone and data.

RA1: Knowledge and Understanding. Knowledge and understanding of the general fundamentals of engineering, scientific and mathematical principles, as well as those of their branch or specialty, including some knowledge at the forefront of their field.

RA5: Applications. Graduates will have the ability to apply their knowledge and understanding to solve problems, conduct research, and design engineering devices or processes. These skills include knowledge, use and limitations of materials, computer models, process engineering, equipment, practical work, technical literature and information sources. They must be aware of all the implications of engineering practice: ethical, environmental, commercial and industrial.

RA6: Generic competences. Graduates will have the generic skills necessary for engineering practice, and which are widely applicable. First, to work effectively, both individually and as a team, as well as to communicate effectively. In addition, demonstrate awareness of the responsibility of engineering practice, social and environmental impact, and commitment to professional ethics, responsibility and standards of engineering practice. They must also have knowledge of business and project management practices, as well as risk management and control, and understand their limitations. Finally, have the capacity for continuous learning.

## OBJECTIVES

- Understand how a networked Linux operating system works.
- Use the different administration tools offered by it.
- Design and implement bash scripts to automate system administration tasks.
- Configure and securely manage the network and network services on a Linux system.

#### DESCRIPTION OF CONTENTS: PROGRAMME

- Introduction to the Linux operating system, user and developer views
- Scheduling tasks with shell script
- Administration tools on a Linux system
- Network configuration on Linux systems
- Network services administration in Linux
- Network security on Linux systems

#### LEARNING ACTIVITIES AND METHODOLOGY

All the activities will be carried out with a virtual machine that will be made available to the students.

This subject is eminently practical, so brief theoretical explanations and their implementation by the students will be intertwined during the teaching of the class.

#### ASSESSMENT SYSTEM

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

Different activities will be carried out to assess the students maturity level on the subject:

- Lab submissions.
- Intermediate exam on lab assignments.

#### BASIC BIBLIOGRAPHY

- Ken O. Burtch Linux Shell Scripting with Bash, Sams, 2004
- Christine Bresnahan, Christopher Negus Linux Bible, Wiley, 2012

#### ADDITIONAL BIBLIOGRAPHY

- Wale Soyinka Linux Administration: A Beginner's Guide, McGraw-Hill, 2015

#### BASIC ELECTRONIC RESOURCES

- Raphaël Hertzog and Roland Mas . THE DEBIAN ADMINISTRATOR'S HANDBOOK: <https://debian-handbook.info/>