

SUBJECT TEACHING GUIDE

G663 - COMPUTING SYSTEMS

Degree in Computer Systems Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Computer Systems Engineering			Type and Year	Compulsory. Year 3
Faculty	Faculty of Sciences				
Discipline	Subject Area: Computer Systems and Networks Compulsory Module				
Course unit title and code	G663 - COMPUTING SYSTEMS				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web	http://aulavirtual.unican.es/				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA				
Name of lecturer	PABLO ABAD FIDALGO				
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Other lecturers	JOSE ANGEL HERRERO VELASCO PABLO PRIETO TORRALBO				

3.1 LEARNING OUTCOMES

- Obtain a first impression about the main System Administration issues and problems
- Planning and installation of a Operative System (Booting, basic configuration, disk partitioning, etc.)
- Learning main administration tasks for a local server_
 - User management: create and delete users
 - Software management: Installation, configuration, version maintenance.
 - Resource management: monitorization, CPU, memory, swap and disk
 - Filesystem maintenance: Backups
- Controlling some basic aspects about network administration. Network interface configuration, subneting and routing policies.

4. OBJECTIVES

- Reaching the necessary level to carry out tasks assigned to a junior system administration
- Able to administrate a mid-size infrastructure, with a reduced number of machines/users and a uniform Operative System.
 - Administration support in larger infrastructure under expert supervision.
 - Direct contact with users, to solve basic problems.

6. SUBJECT PROGRAM

CONTENTS

1	Lecture 1: Introduction. The Administrator (Essential duties and responsibilities) Linux Operating System (origin, evolution and basics). Reliability of Information Sources.
2	Lecture 2: Shell. Basic commands, Advanced commands, Regular expressions, Introduction to shell scripting. Shell scripting with python.
3	Lecture 3: Booting and Shutdown. Startup Process; UEFI, loader, kernel, and services. Systemd. Shutdown Process. Resolution of errors.
4	Lecture 4: File Systems, basics. The FAT and EXT File Systems. Basic management of storage devices. File System administration.
5	Lecture 5: Software Management Free software vs. Proprietary software. Software installation through its source code. Installation through packages. Software repositories. Safety basics.
6	Lecture 6: User Administration. Creating and Removing Users. Basic aspects of security and access. Privilege Delegation.
7	Lecture 7: Resource management. Hardware resource management; cpu memory and disk. Scheduled Tasks (Cron, Timers). Linux cgroups.
8	Lecture 8: File System, advanced administration. Logical Volumes. RAID. Backup and Restore.
9	Lecture 10: The Linux Kernel. Kernel basics. Static reconfiguration. Dynamic reconfiguration, / proc and modules. Drivers.
10	Lecture 11: Linux Networking TCP / IP Basics. Network interface configuration.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
1 Partial Exam, both written and a hands-on exercise on a real machine. An average calification over 5 eliminates the Final Exam	Laboratory evaluation	No	Yes	40,00
Final exam, both written and exercises on real machine	Laboratory evaluation	Yes	Yes	60,00
TOTAL				100,00
Observations				
There will be 1 mid-term exam during the course. It has two sections, written and practical. The practical exercise uses a virtual environment similar to the one used in the laboratory.				
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Observations for part-time students				
Same evaluation as the rest of students. If they cannot attend the partial exams, they must take the final exam (Theory + Exercise)				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Linux Administration Handbook (2nd Edition) Autor: Evi Neneth, Garth Snyder, Trent R. Hein Editorial: Upper Saddler River, NJ: Prentice Hall, cop 2007. ISBN: 0-13-148004-9