SUBJECT TEACHING GUIDE

G660 - Operative Systems

Degree in Computer Systems Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Computer Systems Engineering			Type and Year	Compulsory. Year 2
Faculty	Faculty of Sciences				
Discipline	Subject Area: Computer Systems and Networks Compulsory Module				
Course unit title and code	G660 - Operative Systems				
Number of ECTS credits allocated	6		Term	Semester based (2)	
Web	https://moodle.unican.es/				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA
Name of lecturer	JOSÉ LUIS BOSQUE ORERO
E-mail	joseluis.bosque@unican.es
Office	Facultad de Ciencias. Planta: + 3. DESPACHO - COORDINACION NUEVO PLAN ESTUDIOS FAC. C (3017)
Other lecturers	JOSE MIGUEL PRELLEZO GUTIERREZ ENRIQUE VALLEJO GUTIERREZ MARIANO BENITO HOZ MARIO IBAÑEZ BOLADO

3.1 LEARNING OUTCOMES

- Students will be able to understand and use operating systems, both at the user level and at the programmer level using the POSIX interface.

Specifically, students will:
- Know the structure of an operating system.
- Use an operating system.
- Apply the creating and scheduling techniques of processes and threads.
- Solve problems of concurrent programming with POSIX services.
- Understand what the memory management by the operating system is like.
- Know how the Operating System does input / output operations.
- Identify the different levels of abstraction of a hard disk.

4. OBJECTIVES

This subject focuses on the basic knowledge of an operating system and programming resources it offers . Therefore, the student must:
- Understand the structure of an operating system.
- Use the user interface (shell).
- Assimilate the organization, structure and services of an operating system.
- Know and apply the techniques of creating and planning control flows (processes and threads).
- Know and apply the techniques of communication using the POSIX services.
- Understand how the Operating System manages the memory.
- Understand the structure and management of the Input / Output services.

6. COURSE ORGANIZATION	
CONTENTS	
1	Introduction to the Operating System: Concept of Operating System. Hardware and its Treatment. Functional vision of the operating system. Evolution and components.
2	Shell
3	ANSI C development environment
4	Process management.
5	Scheduling
6	Block one Evaluation
7	Threads management
8	POSIX Process
9	Concurrent Programming
10	Signals
11	Pipes
12	Realization of a concurrent program with processes
13	Virtual Memory management.
14	Block two Evaluation
15	POSIX Threads
16	Memory management. Pagination and Segmentation
17	Mutex and condition variables
18	File Systems and Hard Disks management.
19	Making a concurrent program with threads
20	Theorical problems
21	Evaluation of practical Block 3

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Make a computer program for each part in the computer laboratory.	Laboratory evaluation	No	Yes	50,00
Take a written test of short or test questions without notes.	Written exam	No	Yes	40,00
Conduct a final written problem exam.	Written exam	No	Yes	10,00
TOTAL				100,00

Observations

Theory. The minimum grade to compensate with practices will be 4.
There will be several partial exams of theory eliminatory of matter by way of continuous evaluation. The mark will be the weighted average of the partial evaluations modulated through the questions and class participation.
This part can be recovered in the ordinary and extraordinary exam without partial exams.

Problems.
The problems will be evaluated in group by oral presentation and in the final exam.

Practices. The minimum grade to compensate with the theory will be 4.
The evaluation will be carried out in three coexisting ways: several written exams of the theoretical part of the practices (10%); several works written with the resolution of a problem (this form can have a group nature with an internal survey) (30%); various laboratory practice tests (60%).
This part can be recovered in the ordinary and extraordinary laboratory examination without partials.

In any of the multiple evaluations, the use of illicit means will give rise to the suspense of the involved party and the communication to the center of the fact. If the student were a repeat offender, they would go directly to the extraordinary call and the evaluation regulations may be applied severely.

The evaluations may be carried out synchronously or asynchronously and if necessary for health reasons in person.

Observations for part-time students

Part-time students will be eligible for 100% of the grade, avoiding continuous assessment.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Parte teórica:
-Silberschatz, "Operating systems", 10ª edición, Mc Graw Hill. O su versión en español.

Parte práctica:
-Guiones de los apuntes.