

Operating Systems

Code: 102153
ECTS Credits: 6

Degree	Type	Year	Semester
2501232 Business and Information Technology	FB	2	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Other comments on languages

Spanish and English will be used when necessary, especially in bibliography.

Teachers

Vicente José Ivars Camáñez

Prerequisites

It would be advisable to have studied the subjects of Programming and Introduction Basics for the Problem Solving and Design of Algorithms. It is important to have an acceptable level of programming.

Objectives and Contextualisation

The student will know the basic structure of a computer system and its interconnection systems. The student will learn that it is an Operating System and the services it provides to users and applications. It will also introduce issues related to distributed systems, such as servers, virtualization or the cloud, among others.

Competences

- Appropriately drawing up technical reports according to the customer's demands.
- Proposing, analysing, validating and maintaining IT solutions in the context of a business organisation.
- Students must be capable of analysing, summarising, organising, planning and solving problems and making decisions.
- Working in teams, sharing knowledge and communicating it to the rest of the team and the organisation.

Learning Outcomes

1. Appropriately drawing up technical reports according to the customer's demands.

2. Assessing the benefits of a system.
3. Managing an operating system taking into account the application hardware and software requirements that must be supported.
4. Students must be capable of analysing, summarising, organising, planning and solving problems and making decisions.
5. Working in teams, sharing knowledge and communicating it to the rest of the team and the organisation.

Content

1. Presentation of the subject

Presentation of the subject. Subject and regulations of the subject.

2. Structure of computer systems

Main elements of a computer system: processor, memory systems and storage systems. Measuring units of these elements. How a computer system works: Machine and data instructions.

3. Introduction to the interconnection of computer systems

Main types of networks and interconnection protocols that allow the communication of various computer systems.

4. Introduction to Operating Systems

What is an operative system?. Basic structure. Functions, orders and services. Multiprogramming.

5. Processes and threads

Execution of a program. Definition and characteristics of the processes and threads. Creation and management of processes and threads. Introduction to concurrence and its problems.

6. The future that is already here: Introduction to distributed systems.

Definition Different distributed systems: Servers, clusters, cloud, etc. Distributed software.

Methodology

Theory:

The part of theory of the subject will be done in the hours reserved for the course hours and published by the Faculty. The content of each one of the classes is detailed in the planning sheet of the subject (schedule) that will be published on the first day of class, in the Virtual Campus. Any modification of this initial schedule will be notified via Virtual Campus.

Problems:

The hours dedicated to class of problems are indicated, each course, in the time of the Faculty. The central issue to be addressed in each session of problems is indicated in the timeline. In order for the students to have time to prepare the problems of each session, the statements of the problems will be published sufficiently in advance.

Practices:

The practices will be done in sessions distributed during the course according to the corresponding timetable published in the Virtual Campus. Practice professors will generate date and time lists. Practice groups must be two people.

The activation date for the registration of the practice groups will be made public through a news in the Virtual Campus. Until that moment, the hours and dates of the sessions of the different groups can only be consulted.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Laboratory sessions	10	0.4	2, 3, 4, 5
Problem classes	10	0.4	2, 3, 4
Theoretical Classes	28	1.12	2, 3, 4
Type: Supervised			
Tutorials	15	0.6	2, 3, 4
Type: Autonomous			
Preparation and resolution of exercises, studies and practices	83	3.32	2, 3, 4, 5

Assessment

The evaluation of the subject consists of three parts: Theory, Problems and Practices. The evaluation of the part of Theory represents 60% of the final mark of the subject, the one of Problems 10% and the one of Practices the remaining 30%.

The way in which each of the different parts will be evaluated is detailed below:

Theory:

The evaluation of the theory part will consist of two partial tests (or controls). The day that each of these tests is carried out, as well as the content to be evaluated will be indicated in the planning sheets of the subject (schedule). The theory note will be obtained from the weighted average of the two theory tests, depending on the extent of the subject included. To do this, you must have a minimum of 3.5 for each of the controls. Note that on the day of the second test the first test can not be retrieved.

Problems:

There will be sessions of problems that will be evaluable. In these sessions (they will be done during the expected hours of problems), an exercise will be given that students will have to solve individually during the session. Subsequently, the problem professor will correct these tests and publish the notes (individually) on the Virtual Campus. The realization of these tests is obligatory to pass the subject. The dates of these tests will be indicated in the timetable of the subject.

Practices:

The attendance and punctuality in all practical sessions is mandatory for all the members of the group, to overcome them.

In order to pass the internship it is mandatory TO BE ASSISTED IN ALL SESSIONS OF PRACTICES, its correct functioning, the verification of the responsible professor, respond satisfactorily to the questions of the professor, and the presentation of a written memory, all this individually, detailing:

- Purpose of the practice

- Description and approach of the practice (Organization chart, pseudo code)
- Description of the problems that arise during the execution of the practice and the solutions found.
- Conclusions extracted from the realization of the practice
- Source code of the practice.
- Compilation procedures with the description of the options that allow the teacher to obtain the executable from the source code.

There will be an exam in the last session.

Except in problems, a minimum grade of 5 is necessary for each part of the subject to be approved. On the other hand, it is imperative that the average of the three notes be at least 5 to pass the subject. For example, one of 8 theory and a 4 practice (or vice versa) do NOT allow to pass the subject. Regarding the problems simply adds the weighted note obtained.

Students who do not pass the subject due to not having obtained a minimum of 5 somewhere but the average is more than 5, will be qualified with a 4 final grade. For example, a theory 8, a 7 problem and a 3 practice session will have a final grade of 4, and will be able to enter the recovery process that is described below.

Honor certificates

The granting of honor certificates is the sole criterion of the responsible professors and in any case they can establish a specific test to grant them

Important:

Given that the evaluation methodology is continued, the fact that any delivery of any evaluable evidence is carried out (exercise, evidence, practices ...) is interpreted as the express will on the part of the student to present themselves at Subject and therefore have a different note from "Not Evaluable". An NA rating can only be obtained without having submitted any evaluable evidence throughout the course.

It should be noted that in all areas, but especially the university, an essential piece is the correct formal expression, both oral and written. Therefore, this will be part of the evaluation of all the exercises and will be penalized up to a maximum of 20% of the qualification for each document of evaluable evidence. Spell mistakes and other incorrections in the expression as well as inappropriate presentation will be considered at the teacher's discretion.

Calendar of evaluation activities

The dates of the different evaluation tests (partial exams, exercises, work delivery, ...) will be announced sufficiently in advance during the semester.

The date of the final proof of the subject is programmed in the exam calendar of the Faculty.

"The programming of the evaluation tests can not be modified, unless there is an exceptional and duly justified reason for which an evaluation act can not be carried out. In this case, the people responsible for the qualifications, after consulting the teachers and students affected will propose a new programming within the corresponding teaching period." Section 1 of Article 115. Calendar of evaluation activities (Academic Regulations UAB)

Those and students of the Faculty of Economics and Business who, in accordance with the previous paragraph, need to change an evaluation date, they must submit the petition by filling in the application Request reprogramming application that will be found at https://eformularis.uab.cat/group/deganat_feie/reprogramacio-proves

Procedure for the review of qualifications

Coinciding with the final exam will announce the day and the means by which the final qualifications will be published. In the same way, the procedure, place, date and time of the revision of the same will be reported according to the regulations of the University.

Recovery process

"To participate in the recovery process students must have been previously evaluated in a set of activities that represents a minimum of two thirds of the total grade of the subject or module." Section 3 of Article 112 to have Recovery (Academic Regulations UAB). Today, students have obtained an average grade of the subject between 3.5 and 4.9.

The date of this test is scheduled in the exam calendar of the Faculty. The student who presents and passes will pass the subject with a note of 5. Otherwise he will keep the same note.

The test will consist of two distinct parts, one for Practices and one for Theory. You must pass the minimum mark of 5 each of these parts to pass the subject.

- Theory

It is necessary to pass a written exam that encompasses all the subjects of the subject and which cover both theoretical questions and problems (they can be complex) and include and / or relate topics from the different topics covered.

- Practices

All those students who have attended the practical sessions may be present, but this part is suspended. It will consist of the individual delivery of the corresponding recovery practices, plus the completion of a written individual test.

Irregularities in acts of evaluation

Without prejudice to other disciplinary measures deemed appropriate, and in accordance with the current academic regulations, "in the event that the student conducts any irregularity that may lead to a significant variation of the rating of an assessment act, this evaluation act will be qualified with 0, regardless of the disciplinary process that can be instructed. In case there are several irregularities in the assessment acts of the same subject, the final grade of this subject will be 0 ". Section 10 of Article 116. Results of the evaluation. (Academic Regulations UAB)

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Practice	30	4	0.16	2, 3, 1, 4
Problems	10	0	0	2, 1, 5
Theory	60	0	0	2, 3, 1, 4, 5

Bibliography

Basic bibliography

Theory:

"Concepts of Computing" Alberto Prieto and Beatriz Prieto. Schaum (Mc Graw Hill) 2005

Operating Systems ". Silberschatz, Galvin and Cagne. 7th Edition. 2006 "

"Operación Sistemas, Una visión aplicada". Jesús Carretero, Pedro DeMiguel, Félix Gracia, Fernando Costa, Mc Graw Hill 2003

"Operating Systems". William Stallings, 5th Prentice Hall 2005 Edition

Practices:

The programming environment Unix, R. Pike & Brian Kernighan, Ed. Mc. Graw-Hill

Advanced Unix programming, Rockind M. Ed. Prentice-Hall

The Virtual Campus will also publish information that is considered useful for the development of the subject