



## 1. General information

**Course:** OPERATING SYSTEMS I**Type:** CORE COURSE**Degree:** 347 - DEGREE PROGRAMME IN COMPUTER SCIENCE ENGINEERING (CR)**Center:** 108 - SCHOOL OF COMPUTER SCIENCE OF C. REAL**Year:** 2**Main language:** English**Use of additional languages:****Web site:** Espacio virtual de la asignatura en <https://campusvirtual.uclm.es>**Code:** 42313**ECTS credits:** 6**Academic year:** 2021-22**Group(s):** 20 21 22 23**Duration:** First semester**Second language:** Spanish**English Friendly:** N**Bilingual:** Y

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Lecturer: RAMON HERVAS LUCAS - Group(s): 20				
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## 2. Pre-Requisites

This subject is based on the skills and knowledge acquired in the subjects:

- Programming Fundamentals I
- Programming Fundamentals II
- Computer Architecture Fundamentals

## 3. Justification in the curriculum, relation to other subjects and to the profession

An operating system is a program that manages the hardware of a computer and ease the interaction between it and the user. Therefore, it is a low-level software element that acts as an interface between the high-level software and the hardware. In this subject we address how a program can finally run on a physical system (hardware), an critical knowledge for a computer engineer. It can be considered as one of the fundamental subjects of the degree and appears in all curricula, both national and international.

This subject belongs to a degree that complies with that specified in the Resolution of 8 June 2009, of the -Secretaría General de Universidades- that includes recommendations to be established in the University proposals of degrees related to the profession of Technical Engineer in Computer Science, and covering the specific competences common to the branch of computing [CO5] Knowledge, administration and maintenance of computer systems, services and applications, and [CO10] Knowledge of the characteristics, functionalities and structure of the Operating Systems and to design and implement applications based on their services. Therefore, this is a subject that must be taken on a compulsory basis in the curriculum, regardless of the specific technology that the student wants to enroll.

The knowledge acquired in this subject is complemented, not only with those obtained in the subjects mentioned in the section of prerequisites, but also with those of other subjects in the curriculum (Computer Organization, Concurrent Programming and Real Time) as well as with those of higher course subjects (Distributed Systems, Operating Systems II, etc.).

## 4. Degree competences achieved in this course

Course competences	
Code	Description
CO05	Knowledge, administration, and maintenance of systems, services and digital systems.
CO10	Knowledge about the features, functions, and structures of operating systems and the design and implementation of applications based on their services.
INS01	Analysis, synthesis, and assessment skills.
INS04	Problem solving skills by the application of engineering techniques.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
PER01	Team work abilities.
PER02	Ability to work in multidisciplinary teams.
PER04	Interpersonal relationship skills.

RES05	Acknowledgement of human diversity, equal rights, and cultural variety.
SIS01	Critical thinking.
SIS03	Autonomous learning.
UCLM02	Ability to use Information and Communication Technologies.

## 5. Objectives or Learning Outcomes

### Course learning outcomes

Description

Understanding and use operating systems, both at user level and at programming level using its services.

Performance of the basic administration of an operating system.

## 6. Units / Contents

**Unit 1: Introduction to Operating Systems**

**Unit 2: File System**

**Unit 3: Process Management**

**Unit 4: Main Memory Management**

**Unit 5: Input/Output Management**

## ADDITIONAL COMMENTS, REMARKS

Lab activities:

1. The UNIX Working Environment

2. C Programming

3. File Management

4. Process Management

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CO05 CO10	0.72	18	N	-	Teaching of the subject matter by lecturer (MAG)
Individual tutoring sessions [ON-SITE]		CO05 CO10 UCLM02	0.18	4.5	N	-	Individual or small group tutoring in lecturer's office, classroom or laboratory (TUT)
Study and Exam Preparation [OFF-SITE]	Self-study	CO05 CO10 INS01 SIS01 SIS03	2.1	52.5	N	-	Self-study (EST)
Other off-site activity [OFF-SITE]	Practical or hands-on activities	CO05 CO10 INS01 INS04 PER01 PER02 PER04 SIS03	0.6	15	N	-	Lab Activities Preparation (PLAB)
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	CO05 CO10 INS04 INS05 PER02 PER04 PER05 UCLM02	0.6	15	Y	N	Worked example problems and cases resolution by the lecturer and the students (PRO)
Writing of reports or projects [OFF-SITE]	Self-study	CO05 CO10 INS01 INS04 INS05 PER01 PER02 PER04 PER05 SIS03	0.9	22.5	Y	N	Preparation of essays on topics proposed by lecturer (RES)
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	CO05 CO10 INS01 INS04 INS05 PER02 PER04 PER05 UCLM02	0.6	15	Y	Y	Realization of practicals in laboratory/computing room (LAB)
Final test [ON-SITE]	Assessment tests	CO05 CO10 INS01 INS04 INS05 PER01	0.3	7.5	Y	Y	Final test of the complete syllabus of the subject (EVA)
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>			<b>Total class time hours: 60</b>				
<b>Total credits of out of class work: 3.6</b>			<b>Total hours of out of class work: 90</b>				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

## 8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of active participation	10.00%	0.00%	Non-compulsory activity that cannot be retaken. To be carried out during the theory/lab sessions for students in the continuous assessment modality
Final test	50.00%	50.00%	Compulsory activity that can be retaken (rescheduling) to be carried out within the planned exam dates of the final exam call (convocatoria ordinaria)
			Non-compulsory activity that can be

Theoretical papers assessment	15.00%	15.00%	retaken. To be carried out before end of teaching period
Laboratory sessions	25.00%	25.00%	Compulsory activity that can be retaken. To be carried out during lab sessions
<b>Total:</b>	<b>100.00%</b>	<b>90.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

#### Evaluation criteria for the final exam:

##### Continuous assessment:

In compulsory activities, a minimum mark of 40% is required in order to pass that activity and have the possibility to therefore pass the entire subject. The evaluation of the activities will be global and therefore must be quantified by means of a single mark. In the case of the activities that may be retaken (i.e., rescheduling), an alternative activity or test will be offered in the resit/retake exam call (convocatoria extraordinaria).

The final exam will be common for all the theory/laboratory groups of the subject and will be evaluated by the lecturers of the subject in a serial way, i.e., each part of the final exam will be evaluated by the same lecturer for all the students.

A student is considered to pass the subject if she/he obtains a minimum of 50 points out of 100, taking into account the points obtained in all the evaluable activities, and also has passed all the compulsory activities.

For students who do not pass the subject in the final exam call (convocatoria ordinaria), the marks of activities already passed will be conserved for the resit/retake examcall (convocatoria extraordinaria). If an activity is not recoverable, its assessment will be preserved for the resit/retake exam call (convocatoria extraordinaria) even if it has not been passed. In the case of the passed recoverable activities, the student will have the opportunity to receive an alternative evaluation of those activities in the resit/retake exam call and, in that case, the final grade of the activity will correspond to the latter grade obtained.

The mark of the passed activities in any call, except for the final exam, will be conserved for the subsequent academic year at the request of the student, provided that mark is equal or greater than 50% and that the activities and evaluation criteria of the subject remain unchanged prior to the beginning of that academic year.

The failure of a student to attend the final exam will automatically result in her/him receiving a "Failure to attend" (no presentado). If the student has not passed any compulsory evaluation activity, the maximum final grade will be 40%.

##### Non-continuous evaluation:

Students may apply at the beginning of the semester for the non-continuous assessment mode. In the same way, the student may change to the non-continuous evaluation mode as long as she/he has not participated during the teaching period in evaluable activities that together account for at least 50% of the total mark of the subject. If a student has reached this 50% of the total obtainable mark or the teaching period is over, she/he will be considered in continuous assessment without the possibility of changing to non-continuous evaluation mode.

Students who take the non-continuous evaluation mode will be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences), through the assessment systems indicated in the column "Non-continuous evaluation".

In the "non-continuous evaluation" mode, it is not compulsory to keep the mark obtained by the student in the activities or tests (progress test or partial test) taken in the continuous assessment mode.

#### Specifications for the resit/retake exam:

Evaluation tests will be conducted for all recoverable activities.

#### Specifications for the second resit / retake exam:

Same characteristics as the resit/retake exam call

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
General comments about the planning: The subject is taught in 3 x 1,5 hour sessions per week.	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Kernighan, Brian W.	The C Programming Language	Pearson Educación		0-13-110370-9	1988	
Silberschatz, Abraham	Operating Systems Concepts	McGraw-Hill		978-1-118-06333-0	2013	