

Fundamentals of Computing

Code: 106555
ECTS Credits: 3

2025/2026

Degree	Type	Year
Artificial Intelligence	OB	1

Contact

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Teachers

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

Subject has no prerequisites

Objectives and Contextualisation

The course is introductory. It covers basic concepts of computer organization and design, and basic concepts of operating systems. The main objectives are:

- Understand basic concepts such as: computer hardware, software, operating systems, computer organization, algorithm, program, programing language, compiler, etc.
- Understand the computer functional units.
- Understand the way computers work (low level vision).
- Understand machine langauge and assembly language.
- Get familiar with the Linux Operating system and common system tools.
- Understand the main components of a modern operating system.

Competences

- Design, implement, analyse and validate efficient and robust algorithmic solutions to computational problems derived from the design of intelligent systems.

- Work cooperatively to achieve common objectives, assuming own responsibility and respecting the role of the different members of the team.

Learning Outcomes

1. Understand and be able to use operating systems from a user perspective.
2. Understand the basic principles of computer structure and computers.
3. Work cooperatively to achieve common objectives, assuming own responsibility and respecting the role of the different members of the team.

Content

Main subject content:

1-Introduction

Functional structure of a computer, conceptual levels of a computer, basic elements of a program

2-Information representation

Introduction to data representation: numeric, real numbers, text

3-Introduction to computer architecture

Processor, functional units, execution flow, memory, I/O subsystem, execution flow

4-Intro to Operating Systems

Main components of a modern operating system. User view of the system. Linux system tools

5-Programmer's view of Operating System: processes, memory, I/O

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Theoretical sessions	15	0.6	2, 1
Type: Supervised			
Practical sessions	10	0.4	2, 1, 3
Type: Autonomous			
Autonomous work	45	1.8	2, 1

Two hours of class have been scheduled each week. The timetables are available on the School of Engineering's website.

The classes focus on providing introductory lessons, practical examples, and exercises to be completed by students as graded assignments. The use of generative AI technologies in this course is allowed exclusively as support. Therefore, students must indicate when such tools have been used, and must be able to clearly and reasonably explain the presented results, offering a critical reflection on how the use of these technologies has influenced both the process and the final outcome of the activity. Lack of transparency in the use of AI will be considered academic dishonesty and may result in partial or full penalties on the activity's grade, as well as more severe sanctions in serious cases.

The content and session planning will be available on the course webpage in the UAB Virtual Campus. This space will be the default communication channel between students and instructors. All planned submissions and their assessments will be carried out through the virtual campus.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exercises	20	1	0.04	2, 1
Labs	20	3	0.12	2, 1, 3
Partial exams	60	1	0.04	2, 1

The schedule of assessment activities will be provided on the first day of the course and will be published on the Virtual Campus and on the website of the School of Engineering, in the exams section.

Evaluation

Midterm Exams (60%)

The evaluation of the theory sessions will be based on two midterm exams, which together account for 60% (30% each) of the final grade for the course. These exams are individual.

Problem Assignments (20%)

There will be two assignments submitted in pairs, each contributing 10% to the final grade.

Laboratories (20%)

Two Continuous Assessment activities will be carried out during the semester. These activities will be conducted in pairs during regular class sessions. Each of these assignments will account for 10% of the final course grade

Recovery Process

In order for a student to be eligible for recovery, they must not fall under the "not assessable" category.

Theory content can be recovered through a final exam scheduled after the midterms. In this final exam, students must retake the midterms in which they did not achieve the minimum passing grade (5).

Continuous Assessment activities and problem submissions cannot be retaken.

Review Procedure

For each assessment activity, except the labs and only if expressly requested, a date and time will be set for students to review the activity with the teaching staff. In this context, the grade of the activity can be reviewed. If the student does not attend this review session, no later review will be allowed.

Single Assessment

This course does not offer a single-assessment option.

Grades

Not Assessable

If the student does not submit at least one midterm exam and at least one problem set, the course will be considered not assessable.

Honors Distinction

Granting an Honors Distinction is at the discretion of the course's teaching staff. According to UAB regulations, honors can only be awarded to students who have obtained a final grade equal to or greater than 9.00. Up to 5% of the total enrolled students may be awarded honors. The decision will take into account the student's progress, attendance, and the overall quality of their submissions.

Academic Misconduct and Its Consequences: Cheating, Plagiarism, and Use of Generative AI Technologies

Cheating or plagiarism in any type of assessment activity constitutes a serious offense and will be penalized with a grade of 0 for that activity, with no possibility of resubmission. This applies to both individual and group work (in group cases, all members will receive a 0).

If, during an individual in-class activity, the teacher believes a student is attempting to cheat or finds unauthorized material or devices, the activity will be graded with a 0, without the possibility of resubmission, and the course will be failed.

An assignment, activity, or exam will be considered "copied" when it reproduces all or a substantial part of another student's work.

An assignment or activity will be considered "plagiarized" when part of a text from an author is presented as original without citing the source, regardless of whether the original source is in print or digital format.

The use of generative AI technologies in this course is allowed only as support. The student must indicate when these tools have been used and be able to clearly and reasonably explain the results presented, offering a critical reflection on how the use of such technologies has influenced the process and final result of the activity. Lack of transparency regarding the use of AI will be considered academic dishonesty and may lead to partial or total penalties on the activity's grade, as well as more severe disciplinary actions in serious cases.

Bibliography

"Computer Systems Design and Architecture" Vicent P. Heuring / Harry F. Jordan. Ed. Addison-Wesley

"Computer organization and architecture: principles of structure and function". William Stallings.

"Computer organization and design: the hardware/software interface". Patterson, David A ; Hennessy, John L.; Morgan-Kaufman
"Operating System Concepts", Avi Silberschatz, Peter Baer Galvin, Greg Gagne, Tenth Edition, John Wiley & Sons, Inc, April 2018, ISBN: 978-1-119-32091-3 (e-book)
"Operating Systems internals and design principles". William Stallings. Pearson 2018.

Software

The subject will use the lastest versions of Visual Studio and Ubuntu Linux for the development of the class.

There will be the opportunity to install a Virtual Machine.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	71	English	second semester	morning-mixed