

**Fundamentals of Computing**

Code: 106555  
ECTS Credits: 3

Degree	Type	Year	Semester
2504392 Artificial Intelligence	OB	1	2

## Contact

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## Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

## 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, programming language, compiler, etc.
- Understand the computer functional units.
- Understand the way computers work (low level vision).
- Understand machine language 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

## Methodology

Methodology

There are 2 hours of class scheduled for each week. Timetable is available at the web site of the engineering school: <https://www.uab.cat/web/estudiar/estudis/graus/horaris-1345737392845.html>

Classes will cover theoretical introductory lessons and then some practical examples and exercises to be solved by students and provided as an assessment.

Content and scheduling of the sessions will be available at the virtual campus. Subject web space will be the default communication channel between students and teachers. All planned assignments and assessments will be available there.

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.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Theoretical sessions	15	0.6	2, 1

Type: Supervised

Practical sessions	10	0.4	2, 1, 3
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Type: Autonomous

Autonomous work	45	1.8	2, 1
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## Assessment

Assessment of theory is done by two partial exams with a total weight of 60% of the subject. There will be a final exam that will allow students to be reevaluated. They must take this final exam for those partial exams that have a grade lower than 5.

There will be a list of exercises to solve as assignments that will have a total weight of 20% of the subject.

There will be two labs to do during the semester. Its weight will be of the 20% of the subject.

There is no reevaluation of exercise and lab assignments.

## Assessment Activities

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

## 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 latest versions of Visual Studio and Ubuntu Linux for the development of the class