

# DEGREE CURRICULUM COMPUTER ARCHITECTURE

Coordination: MATEO FORNES, JORDI

Academic year 2023-24

## Subject's general information

Subject name	COMPUTER ARCHITECTURE					
Code	102369					
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION					
Туроlоду	Degree	Course	Character	Modality		
	Bachelor's degree in Digital Interaction and Computing Techniques	1	COMMON/CORE	Attendance-based		
Course number of credits (ECTS)	6					
Type of activity, credits, and groups	Only examination					
Coordination	MATEO FORNES, JORDI					
Department	COMPUTER ENGINEERING AND DIGITAL DESIGN					
Teaching load distribution between lectures and independent student work	Overall, the subject has 180 hours of individual student work.					
Important information on data processing	Consult this link for more information.					
Language	Catalan.					
Distribution of credits	The distribution of credits counting on the group's deployment that is done in the subject is the following: Jordi Vilaplana: 0					

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
MATEO FORNES, JORDI	jordi.mateo@udl.cat	0	

#### Subject's extra information

Subject taught during the second term of the first year of the degree.

It is a compulsory subject.

In order to attend the subject, the knowledge of the functional units of the computer system that are given to the previous Computer Structure course is required.

#### Learning objectives

- Study the global operation of the computer memory hierarchy and the different levels that make it up.
- Learn the organization of information in the memory system so that access is efficient.
- Be able to propose a basic structure for the main memory of a computer.
- Identify and understand the input and output system within the structure of a computer.
- Study the processes and algorithms that must be carried out to perform the basic and complex arithmetic operations within the arithmetic unit.
- Analyze the different solutions that are presented from the point of view of efficiency and cost. Know how to assess which design solutions achieve a better cost-performance commitment.

#### Competences

#### **Basic Competences**

• B01. That students have demonstrated to possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply knowledge coming from the vanguard of his/her field of study.

#### Transversal Competences

- CT3. Acquire training in the use of new technologies and information and communication technologies.
- · CT5. Acquire essential notions of scientific thought
- CT6. Apply the gender perspective to the tasks of the professional field.

#### **General Competences**

- CG2. Design, develop, evaluate and guarantee the accessibility, ergonomics, usability and security of computer systems.
- · CG3. Use adequate hardware and software platforms to develop and execute interactive digital applications
- CG5. Know the basic subject areas and technologies needed to learn and develop new methods and technologies, and those that help to adapt to new situations.
- CG7. Solve problems through initiative, determination, independence and creativity.
- CG8. Capacity for abstraction and critical, logical and mathematical reasoning.

#### Specific Competences

- CE2. Capacity to understand and master the basic concepts of discrete mathematics, logics, algorithmic and computational complexity, and its application to solve computational problems.
- CE3. Basic knowledge of the use and programming of computers, operating systems and databases, and their use in the development of interactive applications.
- CE4. Capacity to know, understand and evaluate the structure and architecture of computers, as well as the basic components that conform them.
- CE16. Capacity to design and evaluate person-computer interfaces that guarantee the usability of systems, services and computer applications.
- CE17. Capacity to apply knowledge on design to propose and defend a design concept for an interactive system and use proper creative technologies to develop each project.
   CE24. Capacity to understand the human factors involved in any interactive process between humans and technology, as well as being able to adequately apply them in the design of interactive products and services, and their interfaces.

### Subject contents

- 1. Memory hierarchy
- 2. Input / output unit
- 3. Arithmetic-logic unit
- 4. Advanced computer architecture concepts

#### Methodology

#### Theory Classes (3 ECTS) \*

- · These classes will explain the theoretical contents of the subject, accompanied by illustrative examples and complementary activities.
- · Virtual sessions through the Videconference tool of the Virtual Campus
- As material of support of the class the slides of the subject will be followed.

#### Problem Classes / Laboratory (3 ECTS) \*

- In these classes the resolution of the collection of problems associated with the theoretical explanations of the subject will be alternated, along with the realization of directed practices.
- The material of the practices will be uploaded to the Virtual Campus.
- · The student must attend the laboratory classes with the previously read statements.

#### Self-employed Work (not face-to-face)

- It is recommended that the student solves the problems not resolved in the class of the problem collection in order to practice and obtain feedback from the teacher.
- \* This course will not have face-to-face classes because the degree is in extintion.

## Development plan

Week 8: Partial examination 1

Week 16 and 17: Partial examination 2

Week 19: Recovery exam

## Evaluation

Acr.	Evaluation activities	Weighting	Minimum grade			
E1	1st partial exam	30%	-			
E2	2nd partial exam	45%	-			
PRA	Assessment	25%	-			
To pass the subject, the final grade must be greater than or equal to 5.						
If you have not passed the subject, you can go to the recovery exam. In this case the grade will be calculated as follows: Final grade = 75% * recuperation grade + 25% * PRA						

The recovery exam can only be attended in case of having failed the subject.

## Bibliography

- Vilaplana Jordi, Saiz Albert, Introducció al llenguatge assemblador. Simulador de Von Neumann. Eines 83.
- Stallings William, Organización y arquitectura de computadores. (10th edition) Prentice-Hall.
- Hamacher Carl, Vranesic Zvonko, Zaky Safwat, Organización de computadores (5th edition). McGraw-Hill.
- Ortega Julio, Anguita Mancia, Prieto Alberto, Arquitectura de computadores. Thomson.
- Hennessy John L., Patterson David. A., Computer Architecture. A Quantitative Approach. Morgan Kaufmann.
  Apuntes de la asignatura. Jordi Vilaplana, Resources section of the Virtual Campus.