Computer Structure

Academic Year: (2021 / 2022) **Review date: 28-06-2021**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: GARCIA CARBALLEIRA, FELIX

Type: Basic Core ECTS Credits : 6.0

Year : 2 Semester : 1

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Programming (Course 1 - Semester 1

OBJECTIVES

The main objective of the course is to describe the main components of a computer and the basic behaviour of a computer.

DESCRIPTION OF CONTENTS: PROGRAMME

The basic concepts of this course are: organization and structure of a computer; data representation; basic arithmetic; execution of instructions; assembly programming; main memory; cache memory; virtual memory; input/output systems.

1. Introduction to computers

2. Data representation and basic arithmetic

3. Assembly programming

4. Processor

5. Memory Hierarchy

6. input/output systems

LEARNING ACTIVITIES AND METHODOLOGY

THEORETICAL-PRACTICAL CLASSES. [44 hours with 100% classroom instruction, 1.67 ECTS]
Knowledge and concepts students must acquire. Student receive course notes and will have basic reference texts to facilitate following the classes and carrying out follow up work. Students partake in exercises to resolve practical problems and participate in workshops and evaluation tests, all geared towards acquiring the necessary capabilities.

TUTORING SESSIONS. [4 hours of tutoring with 100% on-site attendance, 0.15 ECTS]
Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher.

STUDENT INDIVIDUAL WORK OR GROUP WORK [98 hours with 0 % on-site, 3.72 ECTS]

WORKSHOPS AND LABORATORY SESSIONS [8 hours with 100% on site, 0.3 ECTS]

FINAL EXAM. [4 hours with 100% on site, 0.15 ECTS]
Global assessment of knowledge, skills and capacities acquired throughout the course.

METHODOLOGIES

THEORY CLASS. Classroom presentations by the teacher with IT and audiovisual support in which the subject's main concepts are developed, while providing material and bibliography to complement student learning.

PRACTICAL CLASS. Resolution of practical cases and problem, posed by the teacher, and carried out individually or in a group.

TUTORING SESSIONS. Individualized attendance (individual tutoring sessions) or in-group (group tutoring sessions) for students with a teacher as tutor.

LABORATORY PRACTICAL SESSIONS. Applied/experimental learning/teaching in workshops and laboratories under the tutor's supervision.

ASSESSMENT SYSTEM

SE1 - FINAL EXAM. [40 %]
Global assessment of knowledge, skills and capacities acquired throughout the course.

SE2 - CONTINUOUS EVALUATION. [60 %]
Assesses papers, projects, class presentations, debates, exercises, internships and workshops throughout the course.
The evaluation includes the following parts:

The continuous assessment (60 %) includes:
- Programming and laboratory projects: 30%
- Exercises and small exams to perform in the small groups: 30 %

All labs are mandatory. A student follows the continuous assessment when the student makes all lab projects.
The percentage of the final exam is: 40%. The final exam will include theoretical and practical concepts.
The minimum value for this exam will be 4.
The minimum value for the lab pojects will be 4.
The minimun value for each lab will be 2.

The final grade will be increased by 1 point to those students who complete all parts of the continuous assessment, obtain more than 7 in the continuous evaluation, and at least 4 in the final exam.

The final exam in the extraordinary period will include the theoretical and practical concepts of the course.

% end-of-term-examination:	40
% of continuous assessment (assigments, laboratory, practicals…):	60

BASIC BIBLIOGRAPHY

- Félix García, David Expósito, José Daniel García, Jesús Carretero Problemas resueltos de Estructura de Computadores, 2ª edición, Paraninfo, 2009

ADDITIONAL BIBLIOGRAPHY

- D. A. Patterson, J. L. Hennessy Computer organization and Design, Morgan Kaufmann , 2014

- J. Waldron Introduction to RISC Assembly Programming, Addison-Wesley, 1999