Centre	**University College of Engineering of Vitoria-Gasteiz**
Name of subject	**26018 – Computer Architecture**
Qualification	**Degree in Computer Management and Information Systems Engineering**
Type	**Compulsory**
Credits	**6 ECTS**
Year	**2**
Term(s)	**1st**
Department	**Systems and Automation Engineering**
Language	**Spanish**

Outcomes / Objectives

The subject comprises the following: segmented processors, the basic building blocks of today's processors; the functional units that provide support for multimedia applications; minimum essential notions for software and hardware support for implicit and explicit parallelism; cache memory as an integral part of a computer's memory hierarchy. Students analyse the efficiency with which compilers generate code, and write small parallel programs.

Syllabus

Cache memory. Analyses the most important parameters of cache memory. Studies on real programs the importance of taking cache memory into account when programming. Analyses some compiler optimisations.
Linear Segmented Processor. Students build a linear segmented processor. Some compiler optimisations that improve processor performance.
SIMD instructions. Analyses low level SIMD instructions: operations with small vectors supported by the functional units of conventional processors. Practical examples of programs for PC type processors.
Introduction to Parallelism. Different types of parallelism, as well as their hardware and software support. Analyses programs with parallelism extracted by the compiler and directly specified by the programmer.

Methodology

Teaching Method

Face-to-Face Teaching Hours								
Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
40			20					
Student Hours of Non Face-To-Face Activities								
Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
60			30					

Assessment System

General criteria

Oral exam.

Practical activities (exercises, case studies or problems).

Group assignments.

Presentation of assignments, reading...

Clarification regarding assessment

ORAL EXAM: 20

PRACTICAL ACTIVITIES (EXERCISES, CASE STUDIES OR PROBLEMS): 30

GROUP ASSIGNMENTS: 30

PRESENTATION OF ASSIGNMENTS: 20

Bibliography

Basic Bibliography

ARQUITECTURA DE COMPUTADORES. UN ENFOQUE CUANTITATIVO.
J.L. Hennessy, D.A. Patterson. McGraw-Hill, 1993.

COMPUTER ARQUITECTURE. A QUANTITATIVE APPROACH.
J.L. Hennessy, D.A. Patterson (4th ed.), Morgan Kaufmann, 2007

ORGANIZACION DE COMPUTADORES.
V.C. Hamacher, Z.G. Vranesic y S.G. Zaky. Ed. McGraw-Hill, 2003 (5th edition).

ORGANIZACION Y ARQUITECTURA DE COMPUTADORES.
W. Stallings. Prentice-Hall, 2006 (7th edition).

In-depth Bibliography

Websites

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