Course Unit Description - (ARCOM)

(Computer Architecture)

(Mestrado em Engenharia Electrotécnica e de Computadores)

Academic year: 2009/2010

Subject group: Automação e Robótica

	Semestral	**Compulsory**		
Mode of study	Diurno	**Hours / Week**	**T-**Teórica	2
Year	1º		**PL-**Prática-Laboratorial	2
Semester	1º		**OT-**Orientação Tutorial	1

ECTS 6

Objectives

Historic evolution of computer architecture.
Trends of future computer architecture.
Embedded Systems.

Course Contents

Technology for Processors and its evolution.
Evaluation of performance of computers. Moore''s Law. The example of the family x86. Architectures RISC / CISC / VLIW.
Architectures of memory systems.
Segmentation. Paging. Cache memories: Architectures; Policies management;
Virtual Memory. Mechanisms for the Protection.
Parallel Architectures
Models of parallelism. Executive Pipelines. Speculative execution. Out of order execution. SIMD. Support for multitasking environments.
Floating Point Units. Digital signal processors (DSPs).
Multimedia Extensions (MMX, SSE). Graphics Processors (GPUs). Video RAMS (VRAMs).
Embedded Computing Systems.
Systems without storage devices. Systems without interface for users. The core of the operating system (kernel). Preparation / Compilation.
Kernel modules. Communication between applications and kernel.
The booting process.
MBR, Boot sector, boot loader, inittab, rc scripts, etc.

Recommended reading

Computer Organization & Design, David A. Patterson and John L. Hennessy, Morgan Kaufmann
Structured Computer and Organization , Andrew S. Tanenbaum, Prentice Hall

Teaching Methods

Illustrative exposure .
Supported experimentation .
Independent practical work .

Assessment methods

NF = 0.65 * PE + 0.35 * Freq

Freq - Frequence grade
PE - Exame grade
NF - final grade

	Name
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Lecturer:	Jorge Manuel Estrela da Silva (JES)