

BLOCK NAME	COMPUTER ARCHITECTURE
BLOCK CODE	CS-L2B2
COURSE	1
LEVEL	2
CREDITS	6
CLASS HOURS	60
HOMEWORK	90
TOTAL HOURS	150

DESCRIPTION

This course completes the study of computer components, started in Computer Structure, and deals with the techniques used by current systems to obtain high performance by exploiting parallelism.

PRE-REQUISITES

Basic programming skills are needed.

CS-L1B1

OBJECTIVES

The general objective is to understand how a current computer works and how some design decisions greatly influence the performance of applications as well as computer systems.

SKILLS TO BE DEVELOPED

1 - I/O.

1.1 - Introduction to Input Output modules.

1.2 - Input/Output Instructions.

1.3 - Input/Output Techniques.

2 - Memory System.

2.1 - Introduction. Memory Hierarchy.

2.2 - Uniqueness and homogeneity. Minimization of waiting times. Multilevel caches.

3 - ILP processors.

3.1 - Instruction pipeline.

3.2 - Multicycle operations. False dependencies. Accurate handling of exceptions.

4 - Multiprocessors

4.1 - Evaluation of Benefits. Amdahl's Law. Gain. Benchmarks and SPECS.

4.2 - Introduction to high performance architectures. Classification. Clusters. Multicore systems. GPUs..

SYLLABUS

1 - I/O.

2 - Memory Sytem.

3 - ILP Processors.

4 - Multiprocessors.

METHODOLOGY

Resolution of practical activities supervised by the mentor. Compulsory attendance.

DEDICATION AND EVALUATION

The student must pass the mandatory activities (challenges/projects) that are covered in the block.

Each challenge/project produces its own score and has been designed to cover certain block percentages.

Such score is 80% objective (the program that solves the challenge/project works without errors and producing the expected results) and 20% subjective (solution elegance, how clean the code is, documentation).

Block scores are finally calculated by prorating individual activities with respect to their block coverage percentages.