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Politecnico di Torino

Academic Year 2008/09 (first time established in A.Y.2007/08)

01LSSJA

Electronic system design

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (II FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability

SSD	CFU	Activities	Area context
ING-INF/01	5	D - A scelta dello studente	A scelta dello studente

Objectives of the course

The course illustrates design methods for adavanced digital systems,
focusing on the main CAD tools for hardware synthesis and description.

Expected skills

At the end of the course, student will be able to understand and solve typical digital projects, to partition problems in hardware and software parts,
to describe and simulate hardware-oriented and software-oriented solutions, to synthetize such solutions on the most used target libraries.

Prerequisites

Basic digital electronics and design of logic networks.

Syllabus

1. Digital system specifics.
Behavioral modelling using C, System C, Verilog, VHDL.
Methods for time-domain simulation.
VHDL code language for electronic behavioral description.
2. Data format and its rappresentation.
Functional blocks definition and interfaces.
Arithmatic units (adders, multipliers...),
"Control-flow" and "data-flow" machines.
Timing: "pipelining" and "retiming"
3. Logic synthesis using VHDL.
Hardware/software synthesis, technological mapping, programmable logic,
microprocessors and microcontrollers.

Laboratories and/or exercises

Several tutorials regarding commercial simulation softwares, and, optionally, on programmable logic synthesis-oriented softwares, will be done.

Bibliography

Some class notes are avaiable on the course web pages.
J.L. Hennessy, D.A. Patterson, Computer Architecture - A Quantitative Approch (third edition), Morgan-Kaufmann, 2002.

Revisions / Exam

Oral exams with defense of the homeworks.

Programma definitivo per l'A.A.2008/09

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