
Digital Integrated Systems

Finalità

The module deals with structures of complex digital systems, with particular emphasis on monolithic integrated circuits.

Programma

Classification of digital system: partition into subsystem classes.

Design criteria: hierarchy and modularity.

Scaling theory of VLSI CMOS circuits.

Interconnects: placement and routing problems.

Memory subsystems: ROM, PROM, EPROM, E2PROM, sRAM and dRAM.

Arithmetic processing subsystems: adders, carry propagation management.

Integer multipliers: serial and parallel approaches; Booth encoding. Integer dividers.

Floating point arithmetic (IEEE-754 standard): floating point units organization.

I/O subsystems.

Control unit: organization and design.

Timing issues: clock skew, clock distribution and synchronization. Self-timed circuits.

Attività d'esercitazione

Analysis and design of digital systems.

Modalità d'esame

Oral exam.

Testi consigliati

J.M. Rabaey: "Digital Integrated Circuits, A design Perspective", Prentice Hall