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# Fundamental concepts of Informatics B

## Finalità

- Give to the student the basic principles of processing systems' architectures. From boolean algebra to logic circuits to simple systems architectures.

## Programma

- - First Part: Boolean algebra and logic circuits
  - o Introduction to processing systems (2 ore)
  - o Abstraction levels (2 ore)
  - o Boole's algebra (2 ore)
  - o Simple circuits (2 ore)
  - o Maps of Karnaugh (4 ore)
  - o Exercises (2 ore)
- o Memory elements (4 ore)
- o Synchronous and asynchronous circuits (2 ore)
- o Exercises (4 ore)

## Second Part: Architectures of processing systems

- o MSI and LSI components: decoder, multiplexer, ROM (2 ore)
- o Memory elements; registers, counters e shift registers (2 ore)
- o The RTL level (2 ore)
- o Von Neuman (4 ore)
- o Assembly language (2 ore)
- o Procedures and interrupts (2 ore)
- o Memory systems: technologies, locality, hierarchy (4 ore)

Web page: [www.ce.unipr.it/broggi/fondinfob](http://www.ce.unipr.it/broggi/fondinfob)

## Attività d'esercitazione

The exercises cover the first part of the course.

## Modalità d'esame

The exam is divided into two parts::

- First part: circuits
- Second part: theory on architecture.

## Propedeuticità

- o Fondamenti di Informatica A

## Testi consigliati

- o John P. Hayes, Computer Architecture and Organization, McGraw-Hill.
- o Nicolas Carter, Architetture degli elaboratori, McGraw-Hill
- o Copia dei lucidi delle lezioni disponibili sul sito del corso