



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Laboratorio di Elettronica

1920-3-E3001Q053

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#### Aims

Introductory concepts of the structures of most diffused 8-bit and 32-bit microcontrollers.

Introduction to microcontroller programming with emphasis on communication protocols.

#### Contents

Knowhow is given to design hardware systems based on programmable logic devices and the ability to program both 8-bits (8051 based) and 32-bits (ARM, ARM Cortex based) Microcontrollers.

#### Detailed program

The typical functional structure of a Microcontroller. Some microcontroller architectures. The cores of the 8051 series and the ARM and Cortex series. The meaning of the machine cycle and its optimization: single cycle instructions, the pipeline, etc. The meaning of MAC, barrel shifter, etc. The main communication protocols: UART, SPI, I2C, CAN. Every given concept is an introduction to the laboratory experiences, all based on the IoT, Internet of Things.

More at:

<http://pessina.mib.infn.it>

## **Prerequisites**

Notions on classical Physics: Electricity and Magnetism

## **Teaching form**

Every experience is introduced by a lesson, 6 cfu, 72 h.

## **Textbook and teaching resource**

Slides (available on the web page <http://pessina.mib.infn.it>), development sw, instrumentations.

## **Semester**

First semester

## **Assessment method**

Discussion of the report about the laboratory experiences.

## **Office hours**

Anytime, upon notice: [pessina@mib.infn.it](mailto:pessina@mib.infn.it)

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