



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Laboratory of Electronics

1920-3-E3001Q053

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
