

ELECTRONIC SYSTEMS and TECHNOLOGIES

5 credits - 2nd semester – Master in Management Engineering

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GROUND CONCEPTS ON ELECTRONICS

- Currents and Voltages as engineering tools;
- The transistor building block;
- Power control and efficiency;
- Amplification of signals;
- Sensors and transduction mechanisms;
- Acquisition and transmission of data.

THEORY AND PRACTICE OF THE FEEDBACK CONCEPT

- The need for a feedback control;
- Practical examples of feedback circuits;
- Precision, stability, adaptability;
- The pervasiveness of control in automation supported by electronic technology.

DIGITAL CIRCUITS COMPONENTS

- Electronic information processing
- CMOS inverter and Logic digital circuits;
- Integrated Processors : microcontrollers, microcomputers and FPGA;
- Memory devices :

THE IC MANUFACTURING CHAIN

- Clean room : the core of a dust-free production site;
- The processes for the fabrication of microchips : doping, lithography, depositions;
- The challenge to environmentally friendly manufacturing;
- The players in the technological supply chain;

NEW CONCEPTS ON ELECTRONICS

- Flexible Electronics : how to conform to existing objects adding new functionalities;
- Plastic Electronics : Chemistry into play; Drop.on.demand technology; OLED & screens;
- Edible Electronics : Pillow with a remote control; Semiconductor inks; Entering the body.

ELECTRONICS AS A GLOBAL INDUSTRY

- The Silicon Valley : a case study
- The world playground
- Europe roadmap
- The excellence of Italy