Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Electronics				
TEACHER: IULA ANTONIO				
e-mail: antonio.iula@unibas.it		website:		
Language IT				
ECTS: 9	n. of hours: 78	Academic year: 2015/16	Campus: Potenza	Semester: II

TOPICS

The course describes fundamental elements of Analog and Digital Electronics.

TEACHING METHODS (please tick one or more options)

□ xTheoretical lessons
□ xTutorials in classroom
□ Tutorials in laboratory
□ Project works
□ Technical visits
Other activities (please specify) _____

TEXTBOOKS

Sedra/Smith, *Circuiti per la microelettronica*, Edises.

Paolo Spirito, *Elettronica Digitale*, McGraw-Hill.

Millman/Grabel/Terrani, Elettronica di Millman, McGraw-Hill.

ON-LINE EDUCATIONAL MATERIAL

web address:

LEARNING OUTCOMES

The aim of the course is to provide knowledge and understanding of the basic aspects of Analog and Digital Electronics. The characteristics of the main electronic devices. Their application in the main analog and digital circuits are shown as well. Simplified analytical models will be introduced to analyze electronic circuits.

REQUIREMENTS

Basic courses of Mathematics e Physics, Computer architecture, Linear circuits, Signals and Systems.

EVALUATION METHODS (please tick one or more options)

□ xIntermediate verifications
□ xWritten examination
□ Discussion of a project work
□ Practical test
□ xOral examination
Other methods (please specify) _____

DETAILED CONTENT

Ideal Operational Amplifier and main circuits with OP AMPs. The Diode. Characteristic of the diode. Zener diode. Simplyfied models of the diode. Basic circuits with diodes. Transistor: BJT and MOSFET: input output characteristic, the transistor as amplifier and as logical switch. Polarization networks. Linear models for small signals. Coupled stages, examples. Sampling and quantization. A/D and D/A converters. Electrical characteristics of logical gates. The real inverter. Logic levels. Noise Margins. Propagation time.

Power consumption. Product power delay. Fan in and Fan out. NMOS technology: Transfer characteristics and logic levels; Elementary logic gates. CMOS technology: Transfer characteristics and dynamic behavior; Elementary logic gates. TTL technology: Output stage, Standard TTL inverter. Combinational Circuits: Adder, Subtractor, Decoder, MUX etc. Sequential Circuit:Flip Flops S-R, J-K, T, D, master-slave, edge triggered; Registers, Counters. Memories: Non volatile memories (ROM, EPROM, EEPROM, Flash); Static and dynamic RAM .

EXAMINATION SESSIONS (FORECAST)
13/7/2016, 27/7/2016, 14/9/2016, 28/9/2016, 8/2/2017, 22/2/2017

SEMINARS BY EXTERNAL EXPERTS YES □ NO x□

FURTHER INFORMATION