

Assessment and subject description

Óbuda University		Kandó Kálmán Faculty of Electrical Engineering			Institute of Microelectronics and Technology	
Subject name and code: Electronics I. KEXEL1EBNF				Credits: 4		
Full-time, autumn Semester						
Course: Electrical engineering						
Responsible:	Csikósné Dr. Pap Andrea		Teaching staff:	Horváth Márk		
Prerequisites:		Electricity I. KHXVT1EBNF				
Contact hours per week:	Lecture: 1	Class discussion.: 0	Lab hours: 2	Tutorial: 0		
Assessment and evaluation:	written exam					
Subject description						
<i>Aims:</i> to learn about semiconductor components and basic circuits						
Lecture topics						
				Week	Hours	
Semiconductors, doping, PN-junction. Diode, photodiode, LED.				2.	2	
Diode circuits: rectifiers, limiters, voltage references				4.	2	
Bipolar transistor structure, operation, characteristics, equations, temperature dependency. Setting up the operating point, understanding basic behaviour. Current generator.				6.	2	
Principle of amplification, simple model of amplifiers. AC model of transistors. Common emitter and common collector amplifiers.				8.	2	
FETs. JFET, enhancement MOSFET structure, operation, characteristics, equations. Switching mode. CMOS inverter.				10.	2	
Operational amplifiers. Equations, characteristics, frequency response, typical parameters. Comparators, hysteresis comparators.				12.	2	
Negative feedback with operational amplifier. Inverting and non-inverting amplifier circuits. Summing and subtracting amplifiers.				14	2	
Laboratory topics						
				Session	Hours	
Instrument usage, resistor networks				1.	4	
Diode characteristics, rectifier circuits.				2.	4	
Bipolar transistor characteristics, current generator, CE, CC amplifiers.				3.	4	
JFET characteristics, FS amplifier, MOSFET characteristics, CMOS inverter				4.	4	
Opamp amplifier circuits, simple and hysteresis comparator circuits				5.	4	
Time for repeating or finishing measurements				6.	4	
Time for repeating or finishing measurements				7.	4	

Assessment and evaluation:

Participation on laboratories is mandatory and lab reports have to be submitted and accepted in order to be eligible for the exam.

The laboratory sessions have to be finished and reports submitted before the start of the exam period. Missed laboratory sessions have to be completed at a time discussed with the teacher. Unfinished sessions can be continued later as well. There is finite time and place for repeated measurements, therefore missing more than one session without written reason can lead to banning from the subject.

Requirements for starting a laboratory session:

- Presentation of solved homework questions.
- Writing a short test from the questions in the lab guide.
- Having already submitted the lab report for the previous session (if applicable).
- Being in a state and health fit for measurement.

Lab report creation guide is available on the mti.kvk.uni-obuda.hu webpage. Lab reports that are not following the guide will be rejected and have to be rewritten by the deadline set by the teachers.

Participation on lectures is mandatory and will be documented. Missing more than the required (1/3) of lectures can lead to banning.

Exam contains theoretical and calculation exercises. Any complaints about the correction of exams will be considered only after checking the class participation list and the notes the student took in classes.

Suggested material:

mti.kvk.uni-obuda.hu -> downloads

Moodle material

U.Tietze, Ch.Schenk: Electronic Circuits