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

Aims: 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 repors 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. Lab report creation guide is available on the mti.kvk.uni-obuda.hu webpage.

Suggested material:

mti.kvk.uni-obuda.hu -> downloads
U.Tietze, Ch.Schenk: Electronic Circuits