

Assessment and subject description

Óbuda University		Kandó Kálmán Faculty of Electrical Engineering			Institute of Microelectronics and Technology	
Subject name and code: Electronics II.			Credits: 2			
Full-time, autumn Semester						
Course: Electrical engineering						
Responsible:	Dr. Turmezei Péter		Teaching staff:	Horváth Márk		
Prerequisites:		Electronics I.				
Contact hours per week:	Lecture: 2	Class discussion.: 0	Lab hours: 1	Tutorial: 0		
Assessment and evaluation:	written exam					
Subject description						
<i>Aims:</i> to obtain understanding and knowledge the design and working of different analog and digital circuits.						
<i>Topics to be covered:</i> bipolar transistors, field effect transistors, operational amplifiers, passive filters, switching mode						
Topics				Week	Lessons	
PN junction, basic circuits of bipolar transistors, model circuit of common emitter amplifier and high frequency behavior, Miller-capacity				1.	2	
Capacitive and inductive coupled transistor amplifiers, cascode, three transistor amplifier with feedback - example				2.	2	
Application of operational amplifiers: precision rectifier based on inverting op. amp. circuit, full-wave rectifier for ground independent and grounded load, waveforms, measurement amplifiers, programmable gain amplifiers				3.	2	
Large-signal amplifiers, efficiency class A and B amplifiers				4.	2	
Realization of large-signal amplifiers, complemeter large-signal amplifiers, crossover distortion, setting operating point, overcurrent protection, design of single-transistor MOS amplifier				5.	2	
Oscillators, amplitude and phase condition, stability of oscillation, tank circuit, Armstrong oscillator.				6.	2	
<i>Mid-semester test</i>				7.	2	
Amplitude setting of LC oscillators. Hartley, Colpitts and Claps oscillator, Kvartz oscillators, Buttler oscillator,				8.	2	
RC oscillators, Wien bridge oscillator, Twin-T oscillator.				9.	2	
Analog voltage regulators, overcurrent protection. Integrated voltage regulator circuits: 78xx, 79xx.				10.	2	
Analog multipliers. Application of multipliers. Analog to Digital converters. Two quadrant and four-quadrant multipliers.				11.	2	
Switching-mode of semiconductors. Response of diode, waveforms, turn off time. Switching mode of transistors and FETs. Switching of capacitive and inductive load.				12.	2	
Inductivity. DC-DC converters. Buck, boost converters. AC-DC conversion. Integrated controllers. PFCs.				13.	2	
Multivibrators, waveforms.				14.	2	

Assessment and evaluation:

Presence on lectures and laboratories is mandatory. Mid-term test has to be passed and laboratory reports have to be accepted to be eligible for exam.

Suggested material:

Tietze, Schenk: Electronic Circuits