

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Electronics - Multimedia technologies		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Electronics for Multimedia systems		
Lecturer (for lectures)		Jovanović S. Goran, Andrejević-Stošović V. Miona		
Lecturer/associate (for exercises)		Jovanović D. Igor		
Lecturer/associate (for OFE)		Jovanović D. Igor		
Number of ECTS	6	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Devices used for recording and reproducing multimedia content are dominantly digital, but also their work would be impossible without the corresponding analog blocks. The aim of the course is to present to students parts of multimedia devices based on analogue electronic circuits.				
Course objectives				
This course allows students to overcome the basics of analogue, high frequency and energy electronics. To understand the principle of operation of selected analogue electronic circuits, to recognize their main characteristics, as well as the basic principles of their design. Through practical exercises, students are trained in the usage of measuring equipment and simulation software for analogue electronic circuits.				
Course outcomes				
This course allows students to overcome the basics of analogue, high frequency and energy electronics. To understand the principle of operation of selected analogue electronic circuits, to recognize their main characteristics, as well as the basic principles of their design. Through practical exercises, students are trained in the usage of measuring equipment and simulation software for analogue electronic circuits.				
Course outline				
Theoretical teaching				
Amplifier in small signal mode, for audio and video, based on operational amplifiers, analog multipliers, analog filters, power amplifiers, class A, B, AB, D. Characteristics of the amplifier: noise factor, harmonic and intermodulation distortion. Transmitter and receiver architecture, oscillatory circuits and lines, characteristic impedance, reflection coefficient, standing wave coefficient. RF amplifiers, mixers, PLL circuits. Power amplifiers, class C. AM and FM modulators / demodulators. Voltage, battery, charge / discharge converters. Drivers for LED lights. Drivers for DC / step / brushless motors.				
Practical teaching (exercises, OFE, study and research)				
Circuits with operational amplifiers, analog filters, power amplifiers. Transmission lines and resonators, low noise amplifiers, mixers, oscillators and PLL circuits, power amplifiers, modulators / demodulators. Voltage converters, batteries, drivers for LED lights, drivers for electric motors.				
Textbooks/references				
1	B. Razavi, "Fundamentals of Microelectronics", Wiley, ISBN: 978-1-118-15632-2, 2013.			
2	G. Jovanović, "RF electronics", University of Niš, Faculty of Electronics Engineering, 2016 (in Serbian).			
3	G. Jovanović, M. Ilić, "RF electronics – Solution manual", University of Niš, Faculty of Electronics Engineering, 2011 (in Serbian).			
4	Miona Andrejević Stošović, Srđan Đorđević, Predrag Petković, "Practicum for laboratory exercises for analog electronics and analogue electronic circuits", University of Niš, Faculty of Electronics Engineering, Edition: Auxiliary textbook, 2018., ISBN 978-86-6125-201-3 (in Serbian).			
5	S.Manias, "Power Electronics and Motor Drive Systems", Academic Press, 2016.			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	1	0	0
Teaching methods				
Lectures, exercises, laboratory exercises.				
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	
Activity during lectures			Written exam	
Exercises		20	Oral exam	
Colloquia		50		
Projects				