



Subject card

Subject name and code	Analog Electronic Circuits - laboratory, PG_00048068						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	October 2022	Academic year of realisation of subject				2024/2025	
Education level	first-cycle studies	Subject group				Obligatory subject group in the field of study Subject group related to scientific research in the field of study	
Mode of study	Full-time studies	Mode of delivery				at the university	
Year of study	3	Language of instruction				Polish	
Semester of study	5	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Microelectronic Systems -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jacek Jakusz				
	Teachers		dr hab. inż. Jacek Jakusz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study		SUM	
	Number of study hours	30	2.0	18.0		50	
Subject objectives	Strengthening the knowledge gained during the lecture and the practical skills of measurement.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W06] Knows and understands the basic processes occurring in the life cycle of devices, facilities and systems specific to a given field of study.	Strengthening the knowledge of structures and parameters of analog electronic circuits discussed during the lecture.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K6_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions	The student knows the parameters of electronic circuits and is able to carry out their measurements. The student is able to analyze the results of measurements and evaluate the properties of analog electronic circuits.			[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	[K6_W32] Knows the parameters, functions and methods of analysis, design and optimization of analogue and digital circuits and electronic systems	To practice the ability to analyze and calculate the parameters of analog electronic circuits discussed during the lecture.			[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		
	[K6_W05] Knows and understands, to an advanced extent, methods of supporting processes and functions, specific to the field of study	Strengthening the knowledge of structures and parameters of analog electronic circuits discussed during the lecture.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	The student is able to calculate the parameters of electronic circuits and perform their measurements.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		

Subject contents	<ol style="list-style-type: none"> 1. Field Programable Analog Array 2. Basic MOS amplifier circuits 3. Bipolar operational amplifier 4. Negativ feedback 5. Broadband bipolar amplifiers 6. IC analog filters C-switched 7. Cascode - implementation of systemic, properties 8. DC differential amplifier 9. Programmable continuous-time CMOS analog filters 10. Selective amplifiers 11. Basic structures of oscillators (Wien's and Colpitt's) 12. Synchronized generator (PLL) 13. Rectifier diode and voltage stabilizer 14. DC/DC buck converter 15. Transformerless AC/DC converter with power factor corrector 		
Prerequisites and co-requisites	Positiv evaluation of the lecture		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercises	60.0%	100.0%
Recommended reading	Basic literature	<p>Guzinski A: "Linear electronic analog circuits, WNT, 1994</p> <p>Tietze U., Schenk Ch.: Semiconductor circuits, WNT 2009</p> <p>Sedra A.S., Smith K.C.: "Microelectronic circuits", Oxford University Press, New York, Oxford, 2004</p>	
	Supplementary literature	No recomendations	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		