



Subject card

Subject name and code	Electronic Circuits - laboratory, PG_00049312						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject				2025/2026	
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	2	Language of instruction				Polish	
Semester of study	4	ECTS credits				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Microelectronic Systems -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jacek Jakusz					
	Teachers	dr hab. inż. Jacek Jakusz dr hab. inż. Waldemar Jendernalik					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	0.0	15
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 4152 Układy elektroniczne - laboratorium https://enauczanie.pg.edu.pl/2025/course/view.php?id=4152						
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	15	1.0		9.0	25	
Subject objectives	knowledge of instruments and retention of theoretical knowledge on the structure and properties of electronic systems of linear electronic circuits in the student's lab.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	The student is able to calculate the values of basic elements of transistor amplifiers.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_U01] can apply mathematical knowledge to formulate and solve complex and non-typical problems related to the field of study and perform tasks, in an innovative way, in not entirely predictable conditions, by:n- appropriate selection of sources and information obtained from them, assessment, critical analysis and synthesis of this information,n- selection and application of appropriate methods and toolsn	The student is able to calculate the parameters of electronic circuits and then perform their practical measurements. In this way, it strengthens the knowledge of structures and parameters of analog electronic circuits discussed during the lecture.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		

Subject contents	Course content – laboratory 1. CMOS programmable array for analog circuit applications 2. Basic gain stages for MOS amplifiers 3. Amplifier with negative feedback loop 4. Bipolar wideband amplifiers 5. Differential pair amplifier 6. Phase-locked oscillator (PLL) 7. Diode rectifier and voltage regulator 8. Buck DC/DC converter											
Prerequisites and co-requisites	Is required to pass the lecture "ELECTRONIC CIRCUITS" on the 3rd semester											
Assessment methods and criteria	<table border="1" data-bbox="451 365 1487 432"> <thead> <tr> <th data-bbox="451 365 794 398">Subject passing criteria</th> <th data-bbox="794 365 1137 398">Passing threshold</th> <th data-bbox="1137 365 1487 398">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 398 794 432">Practical exercise</td> <td data-bbox="794 398 1137 432">50.0%</td> <td data-bbox="1137 398 1487 432">100.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Practical exercise	50.0%	100.0%			
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Recommended reading	<table border="1" data-bbox="451 443 1487 611"> <tbody> <tr> <td data-bbox="451 443 794 544">Basic literature</td> <td colspan="2" data-bbox="794 443 1487 544"> Guziński A: "Liniowe elektroniczne układy analogowe", WNT, 1994 Tietze U., Schenk Ch.: "Układy półprzewodnikowe", WNT2009 Sedra A.S., Smith K.C.: "Microelectronic circuits", Oxford University Press, New York, Oxford, 2004 </td> </tr> <tr> <td data-bbox="451 544 794 577">Supplementary literature</td> <td colspan="2" data-bbox="794 544 1487 577">No requirements</td> </tr> <tr> <td data-bbox="451 577 794 611">eResources addresses</td> <td colspan="2" data-bbox="794 577 1487 611"></td> </tr> </tbody> </table>			Basic literature	Guziński A: "Liniowe elektroniczne układy analogowe", WNT, 1994 Tietze U., Schenk Ch.: "Układy półprzewodnikowe", WNT2009 Sedra A.S., Smith K.C.: "Microelectronic circuits", Oxford University Press, New York, Oxford, 2004		Supplementary literature	No requirements		eResources addresses		
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Example issues/ example questions/ tasks being completed												
Practical activities within the subject	Not applicable											

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