GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Analog Electronic Circuits - laboratory, PG_00048068		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
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. Waldemar Jendernalik dr hab. inż. Jacek Jakusz dr hab. inż. Grzegorz Blakiewicz	

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_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.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
	[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.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[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.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
	[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.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
	[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.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

Subject contents	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. Pragrammable 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	Guzinski A: "Linear electronic analog circuits, WNT, 1994 Tietze U., Schenk Ch.: Semiconductor circuits, WNT 2009 Sedra A.S., Smith K.C.: "Microelectronic circuits", Oxford University Press, New York, Oxford, 2004
Supplementary literature	No recomendations
eResources addresses	Adresy na platformie eNauczanie: Analogowe układy elektroniczne - laboratorium 2023/2024 - Moodle ID: 30666 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30666

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable