GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electronic Circuits - laboratory, PG_00049312		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2022	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	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		
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	15.0	0.0	0.0	15

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	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_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.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
[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.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents

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

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Is required to pass the lecture "ELECTRONIC CIRCUITS" on the 3rd semester</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Practical exercise</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">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>Supplementary literature</td><td colspan="2">No requirements</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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