GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Circuits and Signals - laboratory, PG_00047759		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Obligatory subject group 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	3	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department Of Signals And Systems -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Grall	
	Teachers	dr inż. Piotr Grall dr inż. Jan Schmidt dr inż. Lech Kilian	

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

Equipping a student with knowledge and skills acquired in studying the basics of analogue circuits and signals. The knowledge is sought to be useful in further professional studies and practice.

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	Student - designs simple systems (dividers, attenuators, filters, inverting and non-inverting amplifiers, etc.), - linearizes non-linear elements, - uses computer programs for circuit analysis and design	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	Student - measures parameters of electrical components and circuits, - uses Fourier series to analyze circuits stimulated by periodic waveforms, - uses computer programs to analyze circuits	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools

Subject contents

Periodic signal spectrum.
Spectrum modification by passing a periodic signal through a linear and nonlinear circuit.
Transmission line.
Attenuator.
Resonant circuit.
Nonlinear cuircuit.
Passive lowpass Butterworth,
Chebyshev and Bessell filters, and active filters.
Time-domain and frequency domain characteristics.

Prerequisites and co-requisites

No requirements

<table>
<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>Midterm short tests</td><td>51.0%</td><td>40.0%</td></tr>
<tr><td>Reports</td><td>51.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">J. Osiowski i J. Szabatin: Podstawy teorii obwodów, tomy I-III. WNT Warszawa 1993 (tom I i tom II) i 1995 (tom III) i wydania kolejne.</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:
Obwody i sygnały - laboratorium 2024/2025 - Moodle ID: 40834
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40834</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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