GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introduction to electronics and electrotechnics, PG_00052079		
Field of study	Nanotechnology		
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	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Ryszard Barczyński	
	Teachers	dr hab. inż. Ryszard Barczyński dr inż. Marek Chmielewski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	15.0	0.0	60

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	60	5.0	60.0	125

Subject objectives

The aim of the course is to teach students the basics of electronics and electrical engineering, as well as basic skills in the design and testing of simple electronic circuits.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W09	The student performs measurements and analyzes their results.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
K6_U04	The student examines the properties of simple electronic circuits.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
K6_U07	The student analyzes the cost of implementing the project.	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information
K6_W08	The student designs and analyzes simple electronic circuits.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
K6_U05	The student designs and builds simple electronic circuits.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>1. Basics laws of electricity and electronic components
2. Classification of electronic components
3. Schemes of electronic circuits
4. DC electronic circuits
5. AC electronic circuits
6. Basic passive components (RLC)
7. Active components
8. Semiconductors
9. Diodes
10. Transistors
11. Special semiconductor devices
12. Manufacturing of semiconductor devices
13. Integrated circuits
14. Safe exploitation of electrical devices</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>No prerequisites</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Report presenting the results of the project</td><td>51.0%</td><td>15.0%</td></tr>
<tr><td>Test of knowledge about instruments used in testing electrical circuits placed on the e-course (15 min.)</td><td>51.0%</td><td>5.0%</td></tr>
<tr><td>Report on the simulation of an electrical circuit</td><td>51.0%</td><td>5.0%</td></tr>
<tr><td>Final exam (90 min.)</td><td>51.0%</td><td>50.0%</td></tr>
<tr><td>Cost estimate for the purchase of elements for the construction of the designed electronic circuit</td><td>51.0%</td><td>5.0%</td></tr>
<tr><td>Assessment of the implementation of laboratory exercises</td><td>51.0%</td><td>20.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. A. Chwaleba, B. Moeschke, G. Płoszajski, Elektronika, WSiP, Warszawa, 1999.
2. S. Bolkowski, Elektrotechnika, WSiP, Warszawa, 2006.
3. A. Kloskowski, J. Wawer, Ł. Marcinkowski, Podstawy elektrotechniki i elektroniki, Wyd. Politechniki Gdańskiej, Gdańsk, 2015.
4. W. Opydo, Elektrotechnika i elektronika dla studentów wydziałów nieelektrycznych, Wyd. Politechniki Poznańskiej, Poznań, 2005.
5. Materials published on e-nauczanie: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=10797</td></tr>
<tr><td>Supplementary literature</td><td>1. P. Hempowicz et al., Elektrotechnika i elektronika dla nieelektryków, WN-T, Warszawa, 1999.
2. P. Horowitz, W. Hill, Sztuka elektroniki 1, WKŁ, Warszawa, 2018.
3. M. Polowczyk, A. Jurewicz, Elektronika dla mechaników, Wyd. Politechniki Gdańskiej, Gdańsk 2002.
4. R. Śledziewski, Elektronika dla fizyków, PWN, Warszawa, 1982.</td></tr>
<tr><td>eResources addresses</td><td>Uzupełniające
Adresy na platformie eNauczanie:</td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Describe nad illustrate Kirchhoff's first law.
2. Build an RC low pass filter and determine its cut-off frequency.
3. Design an inverting amplifier based on an operational amplifier.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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