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 2021	Academic year of realisation of subject	2022/2023
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	Zakład Elektrochemii i Fizykochemii Powierzchni -> Instytut Nanotechnologii i Inżynierii Materiałowej -> 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_U07	Can estimate the cost of purchasing the elements needed to build the designed electronic system.	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information
	K6_W08	He knows the basic laws governing electronics. Distinguishes the main types of electronic components.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
	K6_U05	Independently plans and performs laboratory measurements of electrical quantities in accordance with the received guidelines. Makes a critical analysis of the obtained measurement results and draws conclusions from them.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
	K6_U04	He knows the construction and principle of operation of basic devices used to test electrical circuits. He independently plans and performs laboratory measurements of electrical quantities in accordance with the received guidelines. Makes a critical analysis of the obtained measurement results and draws conclusions from them.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
	K6_W09	He knows the structure and principle of operation of basic devices used to test electrical circuits.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation

Subject contents	
	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

Prerequisites and co-requisites	
	No prerequisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Report presenting the results of the project	51.0%	33.0%
	Final exam (90 min.)	51.0%	34.0%
	Assessment of the implementation of laboratory exercises	51.0%	33.0%

Recommended reading		
	Basic literature	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
	Supplementary literature	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.
	eResources addresses	Adresy na platformie eNauczanie: Wstęp do Elektroniki i Elektrotechniki 2023 - Moodle ID: 28858 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28858

Example issues/ example questions/ tasks being completed	1. Describe nad illustrate Kirchhoff's first law. 2. Build an RC low pass filter and determine its cut-off frequency. 3. Design, build and perform tests of a rumble metal detector.
Work placement	Not applicable