GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electronics, PG_00038435		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	
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	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department Of Power Electronics And Electrical Machines -> Faculty Of Electrical And Control Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Turzyński	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	30.0	0.0	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	8.0	57.0	125

Subject objectives

Knowledge and analysis of fundamental electronic components and applications.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W04	Student is able to explain and knows physical mechanisms of phenomena occurring in semiconductor materials.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
K6_W05	Student is able to perform tasks and laboratory measurements.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
K6_U08	Student knows operation principles of elements and elementary electronic circuits. Student is able to define functions of electronic system and can design a simple electronic circuit.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
K6_K05	Student knows electrical safety rules of using electronic equipment.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents

Laboratory equipment: multimeters, oscilloscopes, measuring probes. Passive electronic components: resistors, capacitors, inductors. Semiconductors: conduction processes, doped semiconductors, pn junction, ms junction. Diodes: switching, rectifier, Schottky, Zener, photodiodes, light emitting diodes, solar panels. Transistors bipolar and unipolar: structure, operation principles, electrical data and characteristics. Optoelectronic components. Amplifiers: technical data, characteristics, influence of negative feedback. Differential and operational amplifiers. Filters. Power amplifiers. Generators. Power supply units. Phase lock loop. Digital circuit technologies. A/C and D/C converters.

Prerequisites and co-requisites

Fundamentals of physics. Basic circuit theory.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written test	50.0%	50.0%
Practical exercises	50.0%	50.0%

Recommended reading	Basic literature	1. Opolski A.: Elektronika dla elektryków. Wydawnictwo PG, Biblioteka Cyfrowa PG, 2008. 2. Opolski A. (red.): Elektronika dla elektryków - Laboratorium. Wydawnictwo PG. Gdańsk 2000.
	Supplementary literature	1. Hennel J.: Podstawy elektroniki półprzewodnikowej. WNT Warszawa 2003. 2. Boksa J.: Analogowe układy elektroniczne. Wydawnictwo BTC Warszawa 2007. 3. Filipkowski A.: Układy elektroniczne analogowe i cyfrowe. WNT Warszawa 2006.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Field-effect transistors: structure, classification, graphic symbols and current-voltage output characteristics	
Work placement	Not applicable	

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