University of Gdańsk

Subject card

Subject name and code	Principles of Electronics - lecture, PG_00198787						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	Bachelor's 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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		1.0		
Learning profile	practical		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		mgr inż. Przemysław Wenderholm				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	0.0	0.0	10
	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	10		2.0		10.0	22
Subject objectives	Transfer of knowledge in the field of: construction, operating principles, parameters and characteristics of basic semiconductor devices, including optoelectronic devices and basic operational amplifier systems, generators and digital systems						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-W03] knows and understands, at an advanced level, directions of development and the latest discoveries in the field of scientific disciplines forming the theoretical basis appropriate to the field of study	knows and understands at an advanced level: - construction, operating principles, parameters, characteristics of semiconductor devices, including optoelectronic devices - construction, operating principles, parameters and characteristics of operational amplifiers and generators - construction, operating principles and parameters of digital circuits	[SW4] test/exam - oral or written
[HML3-W12] knows and understands, at an advanced level, the key processes occurring in the life cycle of devices, facilities, and technical systems	knows and understands at an advanced level: - construction, operating principles, parameters, characteristics of semiconductor devices, including optoelectronic devices - construction, operating principles, parameters and characteristics of operational amplifiers and generators - construction, operating principles and parameters of basic digital circuits	[SW4] test/exam - oral or written
[HML3-W01] knows and understands, at an advanced level, selected facts, phenomena and processes, as well as methods and theories concerning them, explaining the complex relationships between them, constituting basic general knowledge in the field of scientific disciplines forming the theoretical foundations specific to the field of study	knows and understands at an advanced level: - construction, operating principles, parameters, characteristcs of semiconductor devices, including optoelectronic devices - construction, operating principles, parameters and characterictics of operational amplifiers and generators - construction, operating principles and parameters of digital circuits	[SW4] test/exam - oral or written

Subject contents

Semiconductor materials. Semiconductor elements. Operational amplifiers. Generators. Digital circuits.

Prerequisites and co-requisites

1. Knowledge of physics and mathematics at a high school level.

2. Knowledge of basic electrical engineering issues.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
final test	51.0%	100.0%

Recommended reading

Basic literature	1. RUSEK W., PASIERBIŃSKI J.: Electronic components and circuits in questions and answers. WNT, Warsaw 2006.
Supplementary literature	1. BARANOWSKI J., NOSAL Z.: Electronic circuits. Part I - Analog circuits. Helion. 2. FILIPKOWSKI A.: Analog and digital electronic circuits. Helion.
eResources addresses	

Example issues/ example questions/ tasks being completed

To bias a diode in conduction, you must. To bias a pn junction in the reverse direction, you must. The capacitance of a capacitive diode depends on. The output characteristic of a bipolar transistor is. The operational amplifier has the following inputs. The parameters of sinusoidal waveform generators include.

Work placement

Not applicable

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