

**Subject card**

<b>Subject name and code</b>	Principles of Electronics - lecture, PG_00198787						
<b>Field of study</b>	Marine Hydrography						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>				2026/2027	
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>				Obligatory subject group in the field of study	
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>				at the university	
<b>Year of study</b>	1	<b>Language of instruction</b>				Polish	
<b>Semester of study</b>	2	<b>ECTS credits</b>				1.0	
<b>Learning profile</b>	practical	<b>Assessment form</b>				credit	
<b>Conducting unit</b>							
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		mgr inż. Przemysław Wenderholm				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	10.0	0.0	0.0	0.0	0.0	10
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	10		2.0		10.0	22
<b>Subject objectives</b>	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, 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
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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