

Subject card

Subject name and code	Principles of Electronics - laboratory classes, PG_00198789						
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 Subject group related to practical vocational preparation		
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	0.0	0.0	10.0	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, digital systems						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[HML3-U01] is able to plan and conduct experiments, including computer simulations, interpret the results obtained and draw conclusions		is able to: - plan and carry out measurements of static characteristic of basic semiconductor devices - plan and research of electronic system			[SU3] text preparation/written work	
Subject contents	Semiconductor materials. Semiconductor elements. Operational amplifiers. Generators. Digital systems. Measurement of static characteristics of diode. Measurement of static characteristics of unipolar transistor. Measurement of static characteristics of bipolar transistor. Research on operational amplifier. Research on oscillators. Research on basic logical devices.						
Prerequisites and co-requisites	<ol style="list-style-type: none"> 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		
	report		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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