



Subject card

Subject name and code	Electronics and Electrical Engineering, PG_00060455						
Field of study	Mechanical and Naval Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish Not applicable		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Wyposażenia Okrętu -> Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Konrad Marszałkowski					
	Teachers	dr inż. Konrad Marszałkowski dr inż. Magdalena Kunicka					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	18.0	18.0	9.0	0.0	0.0	45
	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	45	6.0		49.0		100
Subject objectives	The aim of the course is to familiarize students with basic issues related to electrical engineering and industrial electronics. The subject will also cover aspects related to the automation of ocean engineering systems and devices.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U05] is able to plant an experiment within the range of measuring the basic operating parameters of mechanical devices using a specialized equipment, interpret the results and reach the correct conclusions	The student knows and is able to use basic knowledge of electrical engineering to assess the correct operation of power electronic devices used, among others, in ship technology.			[SU2] Assessment of ability to analyse information		
	[K6_W10] possesses knowledge on electronics and electrical engineering	The student is able to know and understand the role of power electronics in modern control and automation systems.			[SW1] Assessment of factual knowledge		
	[K6_W02] possesses an organized knowledge on physics, including classic mechanics, electricity and magnetism, shows knowledge of the elements of thermodynamics	The student knows and understands the laws of physics accompanying the transformation and transmission of electricity in electrical devices used in industry.			[SW2] Assessment of knowledge contained in presentation		

Subject contents	<p>Lecture:</p> <p>1. Electric current 2. Sources of electric energy 3. Electric current circuits 4. Magnetic field and electromagnetism 5. Sinusoidal current circuits. 6. Power in alternating current circuits 6. Selected elements of electronic systems 7. Semiconductor elements 8. Rectifiers and control systems used in power electronics 9. Amplifiers and generators 10. Digital circuits 11. Measurements of non-electrical quantities used in industry 12. Programmable logic systems 13. Transmission of non-electric signals over a distance 14. Radio technology in industrial applications.</p> <p>Exercises:</p> <p>1. Electric current in conductors 2. Ohm's law 3. Power and energy of electric current. 4. Series and parallel connection of electronic components 5. Sources of electrical energy 6. Electric field 7. Magnetic field 8. AC circuits 9. Power in AC circuits 10. Three-phase systems 11. Transmission of electrical energy over a distance.</p> <p>Lab:</p> <p>1. Measurements of electrical quantities 2. Ohm's law 3. Power and energy of electric current. 4. Series and parallel connection of electronic components 5. Sources of electricity</p>														
Prerequisites and co-requisites															
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="448 831 794 869">Subject passing criteria</th> <th data-bbox="794 831 1141 869">Passing threshold</th> <th data-bbox="1141 831 1487 869">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 869 794 925">zaliczenie na podstawie sprawozdań</td> <td data-bbox="794 869 1141 925">100.0%</td> <td data-bbox="1141 869 1487 925">10.0%</td> </tr> <tr> <td data-bbox="448 925 794 958">kolokwium</td> <td data-bbox="794 925 1141 958">60.0%</td> <td data-bbox="1141 925 1487 958">30.0%</td> </tr> <tr> <td data-bbox="448 958 794 992">kolokwium (2 w semestrze)</td> <td data-bbox="794 958 1141 992">60.0%</td> <td data-bbox="1141 958 1487 992">60.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	zaliczenie na podstawie sprawozdań	100.0%	10.0%	kolokwium	60.0%	30.0%	kolokwium (2 w semestrze)	60.0%	60.0%
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Example issues/ example questions/ tasks being completed	Jak wyżej.														
Work placement	Not applicable														