



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 2024	Academic year of realisation of subject			2024/2025		
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		
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. Wojciech Leśniewski					
	Teachers						
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_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		
	[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_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		

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="454 837 796 869">Subject passing criteria</th> <th data-bbox="799 837 1141 869">Passing threshold</th> <th data-bbox="1144 837 1482 869">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 873 796 904">kolokwium (2 w semestrze)</td> <td data-bbox="799 873 1141 904">60.0%</td> <td data-bbox="1144 873 1482 904">60.0%</td> </tr> <tr> <td data-bbox="454 909 796 940">kolokwium</td> <td data-bbox="799 909 1141 940">60.0%</td> <td data-bbox="1144 909 1482 940">30.0%</td> </tr> <tr> <td data-bbox="454 945 796 990">zaliczenie na podstawie sprawozdań</td> <td data-bbox="799 945 1141 990">100.0%</td> <td data-bbox="1144 945 1482 990">10.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	kolokwium (2 w semestrze)	60.0%	60.0%	kolokwium	60.0%	30.0%	zaliczenie na podstawie sprawozdań	100.0%	10.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. Sztuka elektroniki. Tom 1-2, Horowitz Paul, Hill Winfield, Wydawnictwa Komunikacji i Łączności WKŁ</p> <p>2. Elektronika bez oporu. Praktyczne przykłady. Witold Wrotek. Wydawnictwo Helion</p> <p>1. Wprowadzenie do elektrotechniki i elektroniki. TOM 1-4. Allan R. Hambley. Wydawnictwo Naukowe PWN 2. Arduino. 36 projektów dla pasjonatów elektroniki. Simon Monk. Wydawnictwo Helion</p> <p>Adresy na platformie eNauczenie:</p>													
Example issues/ example questions/ tasks being completed	Jak wyżej.														
Work placement	Not applicable														