GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Applied Electrical Engineering, PG_00067186		
Field of study	Smart Renewable Energy Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Power Electronics and Electrical Machines -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Michał Michna	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	30.0	0.0	0.0	75

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	75	9.0	66.0	150

Subject objectives

The course aims to teach students the basic laws of electrical and electronic engineering, as well as the fundamentals of electrical and electromechanical energy conversion.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W101] is able to make an in-depth identification of key objects and phenomena related to the field of study, as well as theories that describe them and applicable analytical and design methods	The student can read electrical diagrams.	[SW1] Assessment of factual knowledge
[K7_K01] is prepared to evaluate projects and operations in wind energy systems, demonstrating competencies in designing and optimizing renewable energy systems, including wind power	The student has the ability to interpret and correctly analyse the results of both simulation and experimental investigations.	[SK5] Assessment of ability to solve problems that arise in practice
[K7_U01] is able to apply analytical thinking and solve technical problems related to renewable energy systems, including wind power, using engineering methodologies	The student knows and understands the basic concepts and laws of electrical and electromechanical energy conversion.	[SU4] Assessment of ability to use methods and tools

Subject contents

Course content – lecture
Basic concepts and laws of electrical engineering. Measurements of electrical and non-electrical quantities. Electric drives. Electricity generation and distribution in the electrical power system. Fundamentals of electronics and power electronics. Principles of safe work with electrical equipment.

Prerequisites and co-requisites

Knowledge of the basic laws of physics. Ability to use the tools of analytical mathematics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Writing exam	60.0%	50.0%
Practical exam	60.0%	50.0%

Recommended reading	Basic literature	• Hambley A. R. Electrical Engineering Principles And Application, Pearson 2014 • Szumanowski A. Basics of Electrical Engineering, Electrotechnics, Electronics And Electric Machines Oficyna Wydawnicza Politechniki Warszawskiej
	Supplementary literature	Dennis T. H. Practical Marine Electrical Knowledge, Witherby Seamanship International Ltd
	eResources addresses	
Example issues/ example questions/ tasks being completed	Provide and explain the definition of electric current. Present and explain the definitions of the RMS value of electric current. How can the speed of an induction / asynchronous motor be controlled?	
Practical activites within the subject	Not applicable	

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