



Subject card

Subject name and code	Research laboratory , PG_00057338						
Field of study	Power Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Stanisław Czapp					
	Teachers	prof. dr hab. inż. Stanisław Czapp dr inż. Tomasz Minkiewicz dr inż. Daniel Kowalak dr hab. inż. Robert Kowalak					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30	8.0		37.0	75	
Subject objectives	The aim of the course is to familiarize the student with the principles of conducting research (theoretical analyses, calculations and measurements), the principles of experiment planning, research methods, the development and analysis of results, as well as the presentation of results.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U04] is able to plan and perform experiments using measurements and computer simulations, together with interpretation of results, is able to present and evaluate the course and results of work in a team realizing an advanced engineering project, is able to use technical documentation and to create it independently	The student is able to plan and conduct an experiment, develop measurement results, draw conclusions.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K7_K03] is able to think and act creatively and entrepreneurially, is aware of the responsibility for his/her own work and takes responsibility for teamwork	The student is able to analyze and evaluate the state of knowledge on a selected topic, as well as organize work in a team.	[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice
	[K7_K04] is able to react in emergency situations, health and life threatening when using power equipment	The student knows the principles of ergonomics and safe organization of work at research stations.	[SK3] Assessment of ability to organize work
	[K7_U01] is able to acquire information from literature, databases and other sources in order to improve his/her professional competence (also in English), is able to prepare a simple scientific paper and its summary in English, as well as an oral presentation	The student is able to use the available databases.	[SU4] Assessment of ability to use methods and tools
Subject contents	Analysis and evaluation of literature on a selected topic related to the electrical power engineering. Performing design calculations for an electrical power engineering facility. Development of assumptions for the performance of measurements related to the verification of the condition of the electrical power engineering facility.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Research report	50.0%	100.0%
Recommended reading	Basic literature	- Markiewicz H.: Urządzenia elektroenergetyczne. PWN, Warszawa 2016. - baza IEEE Xplore,	
	Supplementary literature	- Musiał E.: Instalacje i urządzenia elektroenergetyczne. WSP, Warszawa 2008.	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	1. Present the state of the art regarding the methods of measuring the short-circuit loop impedance. 2. Propose a method of measuring the short-circuit loop impedance in a high-power three-phase motor circuit.		
Work placement	Not applicable		