GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Measurements and Exploitation Tests of Electrical Equipment, PG_00047371						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2021		Academic year of realisation of subject	2023/2024			
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	4.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Department of Metrology and Information Systems -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marek Wołoszyk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	10.0	10.0	0.0	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		5.0	65.0		100
Subject objectives	Acquiring knowledge about methods and tools for conducting operational tests of electrical devices by students.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_K01	The student understands the need to update knowledge related to the operational measurements of electrical devices, in particular formal-legal and technical requirements.	[SK2] Assessment of progress of work
K6_K05	The student knows the basic safety principles applicable to the operation of electrical equipment.	[SK5] Assessment of ability to solve problems that arise in practice
K6_U11	The student is able, using typical apparatus for operational tests, to diagnose the electrical installation and to identify the places of defects.	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
K6_U09	The student is able to select the appropriate measuring equipment to perform operational tests of electrical networks and devices.	[SU4] Assessment of ability to use methods and tools
K6_U05	The student plans and conducts operational measurements in accordance with safety principles. The student documents the results of operational measurements in accordance with formal and legal requirements.	[SU1] Assessment of task fulfilment
K6_W11	Student is able to identify the operation of devices and installations not in accordance with the documentation based on the analysis of measurement results.	[SW3] Assessment of knowledge contained in written work and projects
K6_W10	The student has knowledge of the causes and mechanisms of the emergence of deficiencies in the operation of electrical devices. The student assesses the results of basic operational tests of electrical devices.	[SW3] Assessment of knowledge contained in written work and projects
K6_W09	The student has knowledge of the basic measurements and operational tests required at the stage of electricity generation, transmission and distribution.	[SW1] Assessment of factual knowledge

Subject contents

LECTURE Legal framework for the operational tests of installations, machines and devices having a rated voltage up to 1 kV. Loop impedance measurements. Measurement of static and impulse parameters of earthing systems. Differential current switch testing. Determination of the quality of electricity. Fault location on cable lines. Operational tests: on building sites, in public utility buildings, in explosion hazard areas. Measuring and testing of: transformers and electrical machines, etc.
TURTORIALS Demonstration of fault loop impedance parameters measurements, tests of an electrical installation with reflectometer, determining of the quality of electricity and measurements of static and stroke resistance of earthing systems.
LABORATORY Differential current switch measurements and operation analysis. Localization of damage in a cable line. Measurements of short-circuit loop impedance.

Prerequisites and co-requisites

Basic metrology knowledge.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Work at laboratory excersises	60.0%	40.0%
Written test	60.0%	60.0%

Recommended reading

Basic literature	1. Kuprasa K. i inni: Wytyczne. Pomiary w elektroenergetyce. COSiW SEP, 2006. 2. Markiewicz H.: Bezpieczeństwo w elektroenergetyce. WNT, Warszawa 1999.
Supplementary literature	Gryżewski Z.: Prace kontrolno-pomiarowe przy urządzeniach elektroenergetycznych o napięciu do 1 kV. COSiW SEP, Warszawa, 2006.
eResources addresses	Podstawowe https://sep.com.pl/opracowania/opracowania_wykonywanie_pomiarow.pdf - development of SEP on operational measurements Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Loop impedance measurements. Measurement of static and impulse parameters of earthing systems. Fault location on cable lines.
Work placement	Not applicable