GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Exploitation of High Voltage Equipment, PG_00007602		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
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	6	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Mechatronics and High Voltage Engineering -> Faculty of Electrical and Control Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Olesz	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	10.0	0.0	0.0	0.0	20

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	20	3.0	27.0	50

Subject objectives

Getting to know the principles of proper operation and diagnostics of the basic components of the power system.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_K05	The student understands the hazards arising from the operation of power equipment and knows how to protect against them.	[SK2] Assessment of progress of work
K6_U10		
K6_W09		
K6_U09		
K6_U05		
K6_K01		

Subject contents

Types of insulation exposure in operation, voltage - time characteristics of surges, coordination of insulation and selection of test voltages. Indicators for assessing the state of insulation of individual elements of the energy system: transformers, cables, rotating machines, capacitors, insulators, switchgears. Possibilities of assessing the insulation of individual devices used in modern operational practice.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written exam	60.0%	50.0%
written work	60.0%	50.0%

Recommended reading

Basic literature

1. Wodziński J.: Wysokonapięciowa technika prób i pomiarów, PWN, 1997.

2. Praca zbiorowa pod redakcją W. Olecha i M. Kaźmierskiego: Ramowa instrukcja eksploatacji transformatorów, Energopomiar-Elektryka, Gliwice 2006,

3. Florkowska B., Diagnostyka wysokonapięciowych układów izolacyjnych urządzeń elektroenergetycznych, AKADEMIA GÓRNICZO-HUTNICZA IM.STANISŁAWA STASZICA W KRAKOWIE , ISBN: 9788374648332

	Supplementary literature	Megger. The complete guide to electrical insulation testing.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. The types of exposures of insulation systems in operation 2. Amplitude and time characteristics of voltage exposures in the power system 3. Justify the selection of voltages testing insulation systems in the energy system against the background of electrical exposures occurring in operation 4. Principles of coordination of voltages characterizing HV insulation 5. Breakdown mechanisms of liquid and solid dielectrics 6. Resistive type indicators of HV insulation and measurement methods 7. Capacitive type indicators of HV insulation and measurement methods 8. The mechanism of partial discharges and their impact on insulation 9. Principles of PD measurement - setup, scaling 10. Diagnostics of power transformer insulation, 11. Transformer oil testing and DGA test 12. Cable lines diagnostics 13. Possibilities of assessing the insulation of rotating machines 14. Evaluation of insulation of capacitors 15. Earthing properties, diagnostic measurements 16. Construction and diagnostics of surge arresters	
Work placement	Not applicable	