GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00053423		
Field of study	Automation, Robotics and Control Systems		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	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 -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Ryszard Zajczyk	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	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	40.0	75

Subject objectives

Student recognizes the processes of voltage regulation of the Power system, becomes acquianted with voltege regulation devices and circuits.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W06] knows the structure of computers and microprocessors and the tasks of operating systems, has basic knowledge of the basics of computer software, drivers, microprocessor technology, design of simple algorithms and the operation of information networks	The student has the ability to apply IT knowledge in the power industry	[SW1] Assessment of factual knowledge
[K6_U03] can prepare and present a presentation on the problems and results of an engineering task	The student will learn to prepare presentations	[SU1] Assessment of task fulfilment
[K6_U01] can obtain information from literature, databases and other sources; integrate the information obtained, interpret it and draw conclusions, formulate and justify opinions	The student has the ability to analyze issues using literature	[SU2] Assessment of ability to analyse information
[K6_W10] has basic knowledge related to mechatronics and robotics systems	The student has knowledge in this field, which will enable him to use it in this subject	[SW1] Assessment of factual knowledge

Subject contents

The criteria and limitations of voltage regulations. Technical limitations, standards. Criteria of regulations.Algorythms and structure of loop control. Algorythms of territorial regulation. Rational/ reasonable loop control structure of voltage levels and distribution of reactive power. Regulators of individual devices: generators, transformers, capacitor banks. Constructions, algorithms, research, starting. integrated control of ARNE and ARST. Superior regulators/integrated controls. Determining the set values for integrated controls.

Prerequisites and co-requisites

electrical power engineering, electrical power engineering systems

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Practical exercise	60.0%	50.0%
Midterm colloquium	60.0%	50.0%

Recommended reading	Basic literature	Hellmann W., Szczerba Z.: Regulacja częstotliwości i napięcia w systemie elektroenergetycznym. WNT, Warszawa, 1978 r.
	Supplementary literature	Kujszczyk Sz. i inni. Elektroenergetyczne sieci rozdzielcze. Tom 1 i 2. Wydawnictwo Naukowe PLON. Warszawa 1994 r.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Examples of questions and issues to develop served during the lectures. 1 Source voltage in the power system 2. Sources of reactive power in the power system	
Work placement	Not applicable	

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