



Subject card

Subject name and code	Voltage Regulation of the Power System, PG_00042319						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group					
Mode of study	Part-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. Ryszard Zajczyk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	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		7.0		48.0	75
Subject objectives	Student recognizes the processes of voltage regulation of the Power system, becomes acquainted with voltage regulation devices and circuits.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W02	The student knows the basics of automation and control theory			[SW1] Assessment of factual knowledge		
	K7_W01	The student carries out the Project of the power system with elements of voltage and reactive power regulation.			[SW3] Assessment of knowledge contained in written work and projects		
	K7_U02	Preparing a presentation			[SU1] Assessment of task fulfilment		
	K7_U03	the student is able to obtain information from widely available literature			[SU2] Assessment of ability to analyse information		
Subject contents	The criteria and limitations of voltage regulations. Technical limitations, standards. Criteria of regulations. Algorithms and structure of loop control. Algorithms 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		
	Midterm colloquium		60.0%		50.0%		
	Practical exercise		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		Kujarczyk Sz. i inni. Elektroenergetyczne sieci rozdzielcze. Tom 1 i 2. Wydawnictwo Naukowe PWN. 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