



Subject card

Subject name and code	Modern Sources of Electric Energy, PG_00038358						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
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			1.0		
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	dr inż. Marcin Jaskólski					
	Teachers	dr inż. Marcin Jaskólski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	0.0	0.0	10
	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	10	2.0		13.0		25
Subject objectives	The purpose of this course is to familiarize students with modern energy sources.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W03] has an extended and deepened knowledge of the field related to electrical power systems and electrical equipment	Describes the principle of operation of selected technologies for generating electricity.			[SW1] Assessment of factual knowledge		
	[K7_W08] has an extended knowledge of power supply systems power supply and control systems including the use of computer networks and design of these systems in industrial facilities industrial facilities	Performs a schematic presentation of the selected electricity generation system.			[SW1] Assessment of factual knowledge		
	[K7_U11] is able to analyse the variability of electricity loads, calculate power and energy losses, can carry out cost accounting	Calculates the values characteristic for selected power generation systems.			[SU1] Assessment of task fulfilment		
Subject contents	Lecture: Different kinds of the sources especially the planed energy sources in Poland. Balancing principles of energy objects on the examples of: conventional steam power plants, especially the ultra supercritical plants and also these which are equiped with the hybrid systems with coal gasification and the boilers with fluidised bed combustion chamber and also with combined gas and steam blocks. Nuclear power stations with reactors of the latest generation. Some kinds of large and small combined heat and power energy sources. Calculations of technical and working coeffitients of above-mentioned sources. Importance of environmental protection problems.						
Prerequisites and co-requisites	Good knowledge of elements of physics (basic lows, physical quantities and their units and measures, mechanics, electrical engineering, thermodynamics, heat transfer). Knowledge of electrical energy generation technologies: energy conversions, efficiency of single conversion, efficiency of conversion cycle and thermodynamic cycle efficiency. Basic knowledge of mathematics: algebra, geometry, trigonometry, differential and integral calculus.						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Lecture test	60.0%			100.0%		

Recommended reading	Basic literature	<p>Chmielniak T.: Technologie energetyczne. WNT, Warszawa 2021</p> <p>Paska J.: Wytwarzanie energii elektrycznej. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2020</p> <p>Marecki J.: Podstawy przemian energetycznych. WNT, Warszawa 2022</p> <p>Pawlik M., Strzelczyk F.: Elektrownie. WNT, Warszawa 2017</p> <p>Zieliński A. (red.): Elektrownie jądrowe w nowoczesnej gospodarce. Wydawnictwo Naukowe PWN, Warszawa 2024.</p> <p>Kubowski J.: Elektrownie jądrowe. Wydawnictwo Naukowe PWN, Warszawa 2017</p>
	Supplementary literature	<ol style="list-style-type: none"> 1. Praca zbiorowa: Poradnik inżyniera elektryka. Tom III. Warszawa: WNT 2007. 2. Cieśliński J., Mikielwicz J.: Niekonwencjonalne źródła energii. Gdańsk: Wydawnictwo Politechniki Gdańskiej 1996. 3. Szargut J., Ziębik A.: Podstawy energetyki cieplnej. Warszawa: Wydawnictwo Naukowe PWN 2000. 4. Lewandowski W.: Proekologiczne odnawialne źródła energii. Warszawa: WNT 2007.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Balancing principles of energy objects. 2. Describe last generation of nuclear power plants. 3. Describe importance of environmental protection problems. 	
Work placement	Not applicable	

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