



## Subject card

Subject name and code	Economy and Power Engineering Systems, PG_00041983						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2020/2021		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			7.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tomasz Minkiewicz					
	Teachers	dr inż. Tomasz Minkiewicz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0						
Adresy na platformie eNauczanie: Gospodarka i systemy energetyczne [2020/21] - Moodle ID: 5816 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=5816">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=5816</a>							
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	60	6.0	109.0	175		
Subject objectives	The purpose of the subject is to obtain basic knowledge in the area of power generation and management in energetic system with emphasis on power generation technologies.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W07	The student knows the basics of the economic calculation in energy and systems that make up the energy system.			[SW1] Assessment of factual knowledge		
	K6_U04	The student is able to carry out the basic economic assessment of the known technologies of generating electricity.			[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	K6_U02	Student is able to describe electricity generation technologies together with the main production devices.			[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
Subject contents	<p><b>Lecture:</b> characteristics and general data concerning the large part and importance of energy systems in the national economy. Energy resources in the country and their utilization taken into account a generation structure of the national energy system. Basic definitions concerning power and energy, load curves, fuels properties and fuel-handling facilities for various kinds of fuels. Characteristics of different kinds of energy sectors: electrical power system, district heating systems, power engineering economy of industry, transport, agriculture and also municipal economy. Balancing principles of various kinds of energy objects. Fundamentals of cost calculations in the energy systems. Environmental protection problems. General planning principles of the energy systems development.</p> <p><b>Practice:</b> Balancing principles and calculating of technical and working indices of the various energy objects: conventional and nuclear steam power plants, CHP plants, gas turbine plants small decentralised energy systems, of which CHP units, heat only plant and also transport systems of electricity, heat and gas.</p>						

Prerequisites and co-requisites	Good knowledge of elements of physics (basic laws, physical quantities and their units and measures, mechanics, electrical engineering, thermodynamics, heat transfer). Basic knowledge of mathematics: algebra, geometry, trigonometry, fundamentals of differential and integral calculus.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Colloquia during practice	60.0%	50.0%
	Written/Oral examination	60.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Mejro Cz., Troszkiewicz J., Wierzbicka B.: <i>Energetyka dziś i jutro</i>. WNT, Warszawa 1986</li> <li>2. Marecki J.: <i>Podstawy przemian energetycznych</i>. WNT, Warszawa 2007</li> <li>3. Pawlik M., Strzelczyk P.: <b>Elektrownie</b>, WNT, Warszawa 2012</li> <li>4. Góra S., Kopecki K., Marecki J., Pochyluk R.: <i>Zbiór zadań z gospodarki energetycznej</i>, WNT, Poznań 1976</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Szargut J., Ziębik A.: <i>Podstawy energetyki cieplnej</i>. PWN, Warszawa 2000</li> <li>2. Kopecki K.: <i>Jutro energetyczne Polski</i>. Wiedza Powszechna, Warszawa 1981</li> <li>3. Cieśliński J., Mikielwicz J.: <i>Niekonwencjonalne źródła energii</i>. Wydawnictwo Politechniki Gdańskiej, Gdańsk 1996</li> <li>4. Kubowski J.: <i>Nowoczesne elektrownie jądrowe</i>, WNT, Warszawa 2010</li> <li>5. Chmielniak T.: <i>Technologie energetyczne</i>, WNT, Warszawa 2008</li> </ol>	
	eResources addresses	Gospodarka i systemy energetyczne [2020/21] - Moodle ID: 5816 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=5816">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=5816</a>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		