



Subject card

Subject name and code	Designing of energetical installations, PG_00057251						
Field of study	Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2022/2023		
Education level	second-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			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Faculty of Ocean Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marian Piwowarski					
	Teachers	dr hab. inż. Marian Piwowarski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	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	10.0		35.0		75
Subject objectives	Gaining knowledge on industrial installations and possibilities of applying them in energetics						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U02] is able to use known mathematical and numerical methods to analyze and design elements, systems and power transmission networks and internal installations	The student is able to apply the learned mathematical relationships to the analysis and design of energy installations			[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_K05] is aware of the impact of engineering activities on the environment	The student is able to assess the impact of the operation of specific energy installations on the environment			[SK1] Assessment of group work skills		
	[K7_W03] knows advanced aspects of automation and automatic control of power systems or transmission networks and internal installations	The student is able to characterize the methods of automatic regulation of energy systems			[SW1] Assessment of factual knowledge		
[K7_W04] has advanced, ordered and theoretically grounded knowledge in the field of operation and selection of electrical machines, power transmission systems and power electronic devices, classical and forward-looking power technologies and their receivers, knows the principles of selection of power equipment and installations and their receivers and their operation	The student is able to use the theoretical knowledge of energy installations to design its elements			[SW2] Assessment of knowledge contained in presentation			
Subject contents	Review of the most important Industrial energetic installations. Including of the auxiliary equipment to the energetic installations. Steam-water installations. Oil and fuel installations. Construction of the energetic pipelines. Pumping installations. Pneumatic and ventilation installations. Application of the pumps and compressors to the energetic installations.						
Prerequisites and co-requisites	Knowledge on thermal turbines and their thermal cycles.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	100.0%	50.0%
	lecture test	60.0%	50.0%
Recommended reading	Basic literature	<p>Głuch J. (red), <i>Ciepłno-przepływowe relacje diagnostyczne w ruchomych warunkach przemysłowych</i>, Politechnika Gdańska WOIO, Monografia, Gdańsk 2007</p> <p>Szuman R., <i>Urządzenia elektrowni ciepłych</i>, WNT Warszawa 1974</p> <p>Zembaty W., <i>Systemy i urządzenia chłodzące elektrowni ciepłych</i>, WNT, Warszawa 1993.</p> <p>Kosowski K, <i>Ship Turbine Power Plans</i>, Wyd. PG Delft University, Gdańsk 2004</p> <p>Kosowski K, <i>Introduction to the theory of marine turbines</i>, Wyd. PG Delft University, Gdańsk 2004</p> <p>Andrzejewski M., <i>Projektowanie elektrowni parowych</i>, WNT, Warszawa 1994</p>	
	Supplementary literature	Worlds Technical Press	
	eResources addresses	Adresy na platformie eNauczanie: Projektowanie instalacji energetycznych, (PG_00057251) - Moodle ID: 29725 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29725	
Example issues/ example questions/ tasks being completed	Why condenser cooling water pumps of closed coolig systems has larger power need for pumping compared with such pumps in open cooling systems?		
Work placement	Not applicable		