



Subject card

Subject name and code	Monitoring and exploitation of machines and power engineering equipment, PG_00057319						
Field of study	Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group 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	2	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jerzy Głuch				
	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		8.0		12.0	50
Subject objectives	Gaining knowledge about measurement systems and equipment in energetics						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_K04] is able to react in emergency situations, health and life threatening when using power equipment	student can, when formulating and performing engineering tasks, integrate knowledge in the field of energetics, apply a system approach, taking into account also non-technical aspects	[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills
	[K7_W02] has extended and deepened knowledge of physics, chemistry, thermodynamics, fluid mechanics, material science, necessary to understand and describe basic thermal and flow phenomena occurring in and around power equipment and systems, transmission networks and internal installations	student has mathematical knowledge relating to the description and analysis of the operation of machines, devices, as well as related technical processes, enabling: modeling and simulation of technical processes, synthesis of technical systems, mastering the basics of optimization of technical processes, mastering the basics of diagnostics of technical devices and system safety, mastering the basics of detailed methods of description, analysis, synthesis and optimization of technical processes, e.g. frequency methods, state spaces, artificial neural networks, genetic algorithms, fuzzy sets	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
	[K7_K03] is able to think and act creatively and entrepreneurially, is aware of the responsibility for his/her own work and takes responsibility for teamwork	student is able to use technical documentation, technical literature, databases and other sources of information in Polish and English in the field of construction and operation of power facilities and equipment, is able to interpret information, logically combine it and formulate opinions, conclusions and critical evaluations on its basis	[SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness
Subject contents	Measurement errors and uncertainties. Measuring and mechatronic devices. Design of measurement systems. Applications of measuring devices in industry. Characteristics of sensors, controllers and actors in mechatronics and measurements. Distributed Control System (DCS)		
Prerequisites and co-requisites	Basic knowledge in the field of mechanics, fluid dynamics and thermodynamics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture - test	60.0%	50.0%
	lab reports	100.0%	50.0%
Recommended reading	<p>Basic literature</p> <p>Głuch J. (red), <i>Thermal and flow diagnostic relations under real industrial conditions</i>, Politechnika Gdańska WOiO, Monografia, Gdańsk 2007</p> <p>Orłowski Z., <i>Diagnostics in life of steam turbines</i>, WNT Warszawa 2001</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>Project processes of power stations</i>, WNT, Warszawa 1994</p> <p>Janiczek R. S., <i>Exploitation of thermal power stations</i>, WNT, Warszawa 1992</p> <p>Kaliński K. J., <i>Supervising of dynamic processes in mechanical systems</i>, Politechnika Gdańska Gdańsk 2012</p> <p>Potrykus J. (red), <i>Mechatronic man guide</i>, REA, Warszawa 2013</p>		

	Supplementary literature	Worlds Technical Press
	eResources addresses	Adresy na platformie eNauzanie:
Example issues/ example questions/ tasks being completed	What means measuremnet uncertainty?	
Work placement	Not applicable	

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