



Subject card

Subject name and code	Contemporary directions of development in mechanical engineering, PG_00060401						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute Of Energy -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej						
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	20.0	0.0	0.0	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		0.0		0.0	20
Subject objectives	Raising knowledge of students in modern directions of research and directions of development in the discipline Mechanical Engineering						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
Subject contents	Introduction. The role of mechatronics. Hybrid drive. Application of artificial intelligence (AI) methods. New materials. Bionics. Future development paths.						
Prerequisites and co-requisites	Knowledge of mechanics, fluid mechanics and thermodynamics.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	report in English		100.0%		100.0%		

Recommended reading	Basic literature	<p>Bąkowski K.: Gas networks and installations PWN.</p> <p>Tesch K.: Fluid mechanics, Wyd. Gdańsk University of Technology, Gdańsk 2008</p> <p>Heynert H. General Bionics WNT Warsaw, 1975;</p> <p>Benyus J. Innovation inspired by nature. Biomimicry Perennial. New York; 2002;</p> <p>Morecki A. Bionic manipulators WNT Warsaw, 1976;</p> <p>Perycz S., Steam and gas turbines, Gdańsk University of Technology, Skrypt, Gdańsk 1988</p> <p>Kosowski K, Ship Turbine Power Plans, Wyd. PG Delft University, Gdańsk 2004</p> <p>Kosowski K, Introduction to the theory of marine turbines, Wyd. PG Delft University, Gdańsk 2004</p> <p>Allen Bursley Heat Engines Steam, Gas, Steam Turbines and their Auxiliaries</p> <p>Jakubik A., Non-mechanical damage of thermal equipment of power plants, WNT, Warsaw 1974.</p> <p>Gajewski T., Lesikiewicz A., Szymanik R., Przepływowe silniki odjetowe, WNT, Warszawa 1975.</p> <p>K. Gajewski, Turbine car drives, WNT, Warsaw 1978.</p> <p>Miller A., Lewandowski J., Gas-steam power plants, WNT, Warsaw 1999.</p> <p>Orłowski Z., Diagnostyka w życie turbin steamowych, WNT, Warszawa 2001.</p> <p>Walczyk Z., Kiciński J., Dynamics of power turbines, Wydawnictwo PG, Gdańsk 2001.</p> <p>Fletcher C.A.J. Computational Techniques for Fluid Dynamics</p> <p>Ferziger J.H, Peric M. Computational Methods for Fluid Dynamics</p> <p>Domachowski Z.: Automatic regulation of thermal turbine sets. Gdańsk University of Technology Publishing House, Gdańsk, 2011,</p> <p>Ziembik A., Energy economy, Silesian University of Technology Script, Gliwice 1992.</p> <p>Augustyn J.: Intelligent measurement cards in fast diagnostic systems, Pomiary Automatyka Kontrola, No. 2/1999, pp. 5-7.</p> <p>Boczek F., Dyrda B.: Operational calculations PERFORMANCE CALCULATION, Energetyka No. 12/1996, pp. 703-707.</p>
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	Supplementary literature	<p>Domachowski Z.: Automatic regulation of thermal turbine sets. Gdańsk University of Technology Publishing House, Gdańsk, 2011,</p> <p>Ziembik A., Energy economy, Silesian University of Technology Script, Gliwice 1992.</p> <p>Augustyn J.: Intelligent measurement cards in fast diagnostic systems, Pomiary Automatyka Kontrola, No. 2/1999, pp. 5-7.</p> <p>Boczek F., Dyrda B.: Operational calculations PERFORMANCE CALCULATION, Energetyka No. 12/1996, pp. 703-707.</p> <p>Bolikowski J.: Intelligent measurement transducers in the diagnostics of industrial processes, In: (Materials) II National Conference DPP97, Łagów, 8-11, September, 1997, pp. 37-42.</p> <p>Boroń W.: Characteristics of decentralized control systems, Pomiary Automatyka Kontrola nr 6/1998, pp. 203-206.</p>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>Describe artificial intelligence methods in mechanical engineering</p> <p>Application of bionics in mechanical engineering</p>	
Work placement	Not applicable	

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