



Subject card

Subject name and code	Compressors and fans (WM), PG_00042107						
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		2023/2024		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish -		
Semester of study	7		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Zakład Maszyn Przepływowych -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marian Piwowarski				
	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		5.0		65.0	100
Subject objectives	Presentation of the theoretical foundations, principles of operation and construction of compressors andfans. Analysis of selected problems of design and operating these machines.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U01		The student is able to apply theoretical knowledge of simple power systems to design its components		[SU2] Assessment of ability to analyse information		
	K6_W06		Student plans the basic service work of compressors and fans. Carries out measurements, develops and analyzes the results of the measurements of these machines		[SW1] Assessment of factual knowledge		
	K6_U05		Student applies the theory of thermal machines (thermodynamics, fluid mechanics) to describe the the real process. The student explains the principles of operation of compressors and fans. Analyzes and evaluates the construction of these machines.		[SU1] Assessment of task fulfilment		
Subject contents	Division and discussion of types of compressors, blowers and fans. Construction and principle of operation of blowers and fans. Construction and principle of operation of flow compressors. The theory of a single radial stage. Theory of a single axial stage. Computational methods of compressors and fans. Characteristics and control methods. Operational issues.						
Prerequisites and co-requisites	Engineering thermodynamics, Fluid mechanics, Fundamentals of mechanical engineering						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Oddane sprawozdania		100.0%		25.0%		
	Kolokwium		50.0%		75.0%		
Recommended reading	Basic literature		1.Walczak J. Promieniowe sprężarki, dmuchawy i wentylatory, Wydawnictwo Politechniki Poznańskiej, Poznań, 2013r;2.Witkowski A. Sprężarki wirnikowe, Wydawnictwo Politechniki Śląskiej, Gliwice, 2013;				

	Supplementary literature	1.Eckert B. Sprężarki osiowe i promieniowe, PWT, Warszawa, 1959r; 2.Fortuna S. Wentylatory, Wydawnictwo TECHWENT, Kraków, 1999r; 3.Hanlon P.C. Compressor handbook, McGraw-Hill Companies, Inc, NY, 2001r;
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Discuss ways to adjust compressors without changing the characteristics.Why do radial compressors realize higher compressions than axial compressors?	
Work placement	Not applicable	