



Subject card

Subject name and code	Steam and Gas Turbines (WOiO), PG_00042091						
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			2022/2023		
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			English		
Semester of study	6	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Ocean Engineering and Ship Technology -> 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	0.0	0.0	15.0	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	gaining knowledge on thermal turbines						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	K6_U01		student is able to preliminary design a power generation plant with thermal turbines			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject	
	K6_U05		student is able to assess in terms of safety and environmental protection thermal turbine engine for thermal power plant			[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task	
	K6_W06		student can choose thermal turbine engine for power generation plant			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects	
Subject contents	Basic components of a thermal turbine cycle, Choice of a structure and main cycle parameters. Turbines of power stations and domestic heating power stations. Nuclear power units equipped with steam turbine (main types of nuclear reactors, main thermal cycles, parameters of nuclear power units). Theory of turbine axial stage, blading systems flows, losses components of turbine stage, effects of multistage flows, circumferential and internal power, circumferential and internal efficiency. Principles of choice of basic parameters of stages and groups of stages. Multistage turbines, efficiency and power of multistage turbine, characteristic turbine stages, control stage problems, last stage problems of condensing type turbine. Performance of stages in wet steam regions, efficiency losses, erosion and corrosion problems. Gas turbine blading system cooling. Losses caused by turbine stage cooling. Combustion chambers types.						
Prerequisites and co-requisites	basic knowledge in thermodynamics and fluid dynamics						
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
	seminary		100.0%			50.0%	
	lecture		60.0%			50.0%	
Recommended reading	Basic literature		Perycz S., Turbiny parowe i gazowe, Politechnika Gdańska, Skrypt, Gdańsk 1988 Perycz S., Turbiny parowe i gazowe, Maszyny Przepływowe T. 10, Wydawnictwo Instytutu Maszyn Przepływowych PAN, Gdańsk 1992. Kosowski K, Ship Turbine Power Plans, Wyd. PG Delft University, Gdańsk 2004 Kosowski K, Introduction to the theory of marine turbines, Wyd. PG Delft University, Gdańsk 2004				

	Supplementary literature	World's technical press
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Describe losses different from blade losses in turbine stage	
Work placement	Not applicable	