



Subject card

Subject name and code	Nuclear power plant turbines, PG_00055909						
Field of study	Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject				2023/2024	
Education level	first-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	3	Language of instruction				Polish	
Semester of study	6	ECTS credits				1.0	
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	0.0	0.0	0.0	15
	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	15		1.0		9.0	25
Subject objectives	Familiarizing students with the specifics of turbines design applied in the power industry using nuclear processes						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K6_W11] has knowledge of known technologies and non-technical aspects to solve simple engineering tasks in the field of energy systems and devices		student can assess the effectiveness of energy technology, especially for nuclear power plants			[SW1] Assessment of factual knowledge	
	[K6_W02] has a basic knowledge of physics (including optics, electricity and magnetism), chemistry, technical thermodynamics, fluid mechanics and general mechanics needed to understand and describe the basic phenomena occurring in devices and systems, energy plants and transmission networks and their environment		student can choose the best devices for a given energy technology, can assess the impact of energy technologies on environmental values with knowledge of the laws of physics			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge	
Subject contents	Basic components of a nuclear steam 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. Main types of nucleargas turbine power units, choice of their parameters and thermal cycles. Choice of parameters and structures of combined gas-steam cycles. Performance of stages in wet steam regions, efficiency losses, erosion and corrosion problems. Choice of rotational frequency, numbers of shafts and casings of nuclear steam turbines and gas turbines. Thermodynamic principles of nuclear steam turbines control, methods of control.						
Prerequisites and co-requisites	Knowledge of heat turbines and their heat cycles						
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
	test		60.0%			100.0%	

Recommended reading	Basic literature	Głuch J. (red), Ciepłno-przepływowe relacje diagnostyczne w ruchowych warunkach przemysłowych, Politechnika Gdańska WOI, Monografia, Gdańsk 2007 Szuman R., Urządzenia elektrowni ciepłych, WNT Warszawa 1974 Zembaty W., Systemy i urządzenia chłodzące elektrowni ciepłych, WNT, Warszawa 1993. Kosowski K, Ship Turbine Power Plants, Wyd. PG Delft University, Gdańsk 2004 Kosowski K, Introduction to the theory of marine turbines, Wyd. PG Delft University, Gdańsk 2004 Andrzejewski M., Projektowanie elektrowni parowych, WNT, Warszawa 1994 Janiczek R. S., Eksploatacja elektrowni parowych, WNT, Warszawa 1992
	Supplementary literature	Design and Construction of Nuclear Power Plants, ISBN-13: 9783433030424 / Angielski / Miękka / 2013 / 150 str., Jurgen Schnell ; Julian Meyer ; Rudiger Meiswinkel
	eResources addresses	
Example issues/ example questions/ tasks being completed	Energetic nuclear power plants of the fourth generation	
Work placement	Not applicable	