GDAŃSK UNIVERSITY OF TECHNOLOGY

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 1988Perycz 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 2004Kosowski K, Introduction to the theory of marine turbines, Wyd. PGDelft 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	