

SDAŃSK UNIVERSITY 的 OF TECHNOLOGY

Subject card

Subject name and code	Modelling of Power Equipment, PG_00042199							
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			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			3.0		
Learning profile	general academic profile		Assessment form			exam		
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering							
Name and surname	Subject supervisor	dr inż. Andrzej Augusiak						
of lecturer (lecturers)	Teachers		dr inż. Alicja L	nż. Alicja Lenarczyk				
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
of instruction	Number of study hours	15.0	0.0	15.0	15.0		0.0	45
	E-learning hours inclu	ided: 0.0						
Learning activity and number of study hours	Learning activity Participation in classes include plan		didactic Participation in ed in study consultation hours		Self-study SUM			
	Number of study 45 hours		5.0		25.0		75	
Subject objectives	Mathematical modeling definitions and basic types, static and dynamic models, deterministic and stochastic models, modeling of thermodynamic properties of water and steam computational standards used, general types of optimization models related to energy devices, components of mathematical models, integer- and mixed-integer models, modeling of energy devices in GateCycle software.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	K6_W08		The student is able to correctly select the components of thermodynamic cycles in power plants and combined heat and power plants and their design and operating parameters.			[SW3] Assessment of knowledge contained in written work and projects		
	K6_U02		The student is able to model the balance of the heat exchanger and carry out a technical analysis of the heat exchanger operation in the system			[SU1] Assessment of task fulfilment		
Subject contents	LECTURE and SEMINAR Mathematical modeling definitions and basic types, static and dynamic models, deterministic and stochastic models, modeling of thermodynamic properties of water and steam computational standards used, general types of optimization models related to energy devices, components of mathematical models, integer- and mixed-integer models, modeling of energy devices in GateCycle software							
	optimization of properties in thermal power plants (steam reheating and feed water heating), optimization of insulation thickness in buildings, modeling gas turbine and combined cycle gas turbine power plants in GateCycle software							
Prerequisites and co-requisites								

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade		
	Project	60.0%	30.0%		
	Test on lecture topics	60.0%	40.0%		
	Reports from laboratory classes	60.0%	30.0%		
Recommended reading	Basic literature	1. Lewandowski J., Miller A.: Układy gazowo-parowe na paliwa stałe. Perspektywy zastosowań i modelowanie matematyczne. WNT, Warszawa 1993 2. Badyda K.: Zagadnienia modelowania matematycznego instalacji energetycznych. Rozprawa habilitacyjna. Politechnika Warszawska, Warszawa 2001			
	Supplementary literature	2. Lewandowski J., Miller A., Uzunow N., wirski K.: Modelowanie matematyczne procesów cieplno-przepływowych w układach maszyn i urzšdzeń energetycznych. W: I konferencja Problemy Badawcze Energetyki Cieplnej, Warszawa 1993			
	eResources addresses	Adresy na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed	Analysis of combined-cycle power plant operation with the selected gas turbine type.				
Work placement	Not applicable				