

表 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Numerical Methods inHeat Technology, PG_00042139							
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 none		
Semester of study	6		ECTS credits			2.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Department of Energy and Industrial Apparatus -> Faculty of Mechanical Engineering and Ship Technology						Technology	
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Tomasz Muszyński						
	Teachers dr hab. inż. Tomasz Muszyński							
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory Project		t	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		3.0		17.0		50
Subject objectives	Presentation of the basics of computer modelling of processes from the area of heat technology so that the student could be able to understand and interprete the results obtained using commercial numerical codes.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	K6_U04		The student is able to perform a basic analysis of energy systems using engineering computing applications.					
	к6_U06		The student is able to compare the operation of power devices and their model operating parameters in order to analyze the operation of the device.					
	K6_W09		The student is able to model the work of comparative work cycles of energy devices with the use of engineering computing applications.					
Subject contents	Laboratory classes 1. Application of finite difference method for heat conduction in electronic radiator (3). 2. Application of interpolation and numerical differentation methods on the example of selected experimental data (3). 3. Application of Runge-Kutta methods for solving of the model of moisture detector (3). 4. Presentation of capabilities of commercial package (6).							
Prerequisites and co-requisites	mathematics I, II, III, physics, fluid mechanics							
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade		
	Lab task		60.0%			60.0%		
	Final test		60.0%			40.0%		

Recommended reading	Basic literature	1.Patankar S.V. Numerical Heat Transfer and Fluid Flow, Taylor and Francis, 1980. 2.Bilicki Z., Cieśliński J., Doerffer S., Kwidziński R., Mikielewicz D., Metody komputerowe w technice cieplnej, Wydawnictwo IMP PAN, Gdańsk, 1996. 3.Minkowycz W. J., Sparrow M., Schneider G. E., Pletcher R. H., Handbook of Numerical Heat Transfer, Whiley, 1988				
Supplementary literature		No requirements				
	eResources addresses	Adresy na platformie eNauczanie:				
		Metody komputerowe w technice cieplnej, W/L ,Energetyka. sem 6, lato 22/23 PG_00042139 - Moodle ID: 29378 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29378				
Example issues/ example questions/ tasks being completed	Modeling of transient heat transfer.Modeling of the iterative solution by Euler's method.Modeling of the a simple FEM model from equation system.					
Work placement	Not applicable					