

Subject card

Subject name and code	Partial differential equations , PG_00025512							
Field of study	Mathematics							
Date of commencement of studies	October 2021		Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies		Subject group			Obligatory subject group in the field of study 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			5.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Department of Differential Equations and Mathematical Applications -> Faculty of Applied Physics and Mathematics							
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Sergey Kryzhevich						
	Teachers		dr hab. Sergey Kryzhevich mgr inż. Urszula Goławska					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	oject Seminar		SUM
of instruction	Number of study hours	30.0	30.0	0.0	0.0		0.0	60
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	ing activity Participation in classes include plan				Self-study SUM		
	Number of study 60 hours		5.0		60.0		125	
Subject objectives	Acquiring basic knowledge of the theory of partial differential equations and their applications.							
Learning outcomes	Course outcome Subject outcome Method of verifi						fication	
	K6_U09		Student uses ordinary equations to solve partial differential equations			[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	K6_W01		The student has knowledge of the theory of partial differential equations.			[SW1] Assessment of factual knowledge		
	K6_U06		Student knows how to use theorems and methods of calculus of functions of one and several variables			[SU4] Assessment of ability to use methods and tools		
	K6_U07		Student uses selected algorithms for solving differential equations.			[SU4] Assessment of ability to use methods and tools		
	K6_W03		Student understands the construction of mathematical theories, mathematical formalism can be used to construct and analyze simple mathematical models in other sciences			[SW2] Assessment of knowledge contained in presentation		
Subject contents	1. First integrals` method of solving non-linear systems of ODEs. 2. Basic definitions and examples of problems that lead to PDEs. 3. PDEs of the first order. Method of characteristics. 4. Classification and canonical forms of second order equations in two independent variables. 5. Hyperbolic equations: the vibrating string. The Sturm-Liouville eigenvalue problem. 6. Parabolic equations: the fundamental solution for the heat equation. 7. Eliptic equations: harmonic functions and their properties; Laplace's equation.							
Prerequisites and co-requisites	The knowledge of Mathematical Analysis and Ordinary Differential Equations							

Data wydruku: 07.05.2024 07:12 Strona 1 z 2

Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade		
and criteria	tests	50.0%	100.0%		
Recommended reading	Basic literature	H. Marcinkowska Wstęp do teorii równań różniczkowych cząstkowych, PWN 1972 r. L.C. Evans Równania różniczkowe cząstkowe, PWN 2002 r. W. Żakowski, W. Leksiński Matematyka", tom IV, PWN 1984 r.			
	Supplementary literature	 Z. Kamont Równania różniczkowe czżstkowe pierwszego rzędu, GTN 2003 r. A.N. Tichonow, A.A. Samarski Równania fizyki matematycznej, PWN 1963 r. D. Bobrowski, J. Mikołajski, J. Morchało, Równania różniczkowe cząstkowe w zastosowaniach, Wydawnictwo Politechniki Poznańskiej, Poznań, 1995 r. M.M. Smirnow, Zadania z równań różniczkowych cząstkowych, PWN, Warszawa, 1970 r. 			
	eResources addresses	Adresy na platformie eNauczanie: Równania różniczkowe cząstkowe - 2023/2024 - Moodle ID: 34717 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34717			
Example issues/ example questions/ tasks being completed	The definition of a harmonic function Solve PDEs by separation of variables Formulate the initial problem for infinite string				
Work placement	Not applicable				

Data wydruku: 07.05.2024 07:12 Strona 2 z 2