

Subject card

Subject name and code	Introduction to numerical methods, PG_00037298								
Field of study	Technical Physics								
Date of commencement of studies	October 2021		Academic year of realisation of subject			2022/2023			
Education level	first-cycle studies		Subject group			field o	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	at the university		
Year of study	2		Language of instruction			Polish	Polish		
Semester of study	4		ECTS credits			4.0	4.0		
Learning profile	general academic profile		Assessment form			asses	assessment		
Conducting unit	Department of Theoretical Physics and Quantum Information -> Faculty of Applied Physics and Mathematics								
Name and surname of lecturer (lecturers)	Subject supervisor	prof. Andrew Felt							
	Teachers		prof. Andrew Felt						
			prof. dr hab. Julien Guthmuller						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	ect Seminar		SUM	
	Number of study hours	30.0	0.0	30.0	0.0		0.0	60	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity Participation in classes including plan				Self-study		SUM		
	Number of study hours	60		4.0		36.0		100	
Subject objectives	To teach students how to use basic numerical methods.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K6_W03		Possesses the orderly knowledge of the basic numerical methods which enables to model physical chosen phenomena and some technical processes.			[SW1] Assessment of factual knowledge			
	K6_U03		Possesses skills of writing applications with needed numerical method using the chosen programming language and adequate bundled software.			[SU1] Assessment of task fulfilment			
	K6_W05		Possesses the basic knowledge how to make usage of chosen specific to computer science in physics and technology.			[SW1] Assessment of factual knowledge			

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Drawing curves given by formulas. Fractals. Fractional dimension. Examples include the snowflake (the von Koch curve and the Mandelbrot stet.) 2. (2 h.) Methods of finding the roots of functions amoung other subjects: the bisection method, the Newton-Raphson method and hybrid methods. 3. (2 h.) Interpolation methods, amoung other subjects: the Lagrange interpolation and the Hermitte interpolation. 4. (2 h.) Interpolation continued, functions	Subject contents	1. (2 h.) Brief guide to good programming habits. Testing and debugging. Elentary computer graphics.							
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Work placement Not applicable		4. Romberg integration							
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