

Subject card

Subject name and code	Numerical algorithms, PG_00178887						
Field of study	Mathematics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		5.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Andrzej Nowik				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	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 didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	60		5.0		60.0	125
Subject objectives	The aim of the course is to familiarize students with numerical computations, their applications, and the problems that arise when performing such calculations.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MATMU2_K06] is ready to formulate opinions on basic mathematical issues	The student is prepared to formulate opinions on fundamental mathematical issues.	[SK8] observation of student's independent or team work
	[MATMU2_K05] is ready to independently search for information in literature, also in foreign languages	The student is able to independently search for information in professional literature.	[SK2] presentation/project/paper/report
	[MATMU2_W05] knows and understands well at least one software package used for symbolic calculations or statistical data processing	The student has a good knowledge of at least one software package for symbolic computations and one package for statistical data analysis.	[SW1] oral statement/conversation/discussion
	[MATMU2_K04] is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; ethical conduct	The student understands and appreciates the importance of intellectual honesty.	[SK8] observation of student's independent or team work
	[MATMU2_K01] is willing to acknowledge the limitations of his or her own knowledge and is willing to pursue further education	The student is aware of the limitations of their own knowledge and demonstrates readiness for further education.	[SK8] observation of student's independent or team work
	[MATMU2_K02] is ready to precisely formulate questions to deepen his/her understanding of a given topic or find missing elements of reasoning	The student is able to formulate precise questions that deepen the understanding of a given topic.	[SK1] oral statement/conversation/discussion
	[MATMU2_K03] is ready to work in a team; understands the need to systematically work on all long-term projects	The student is ready to work in a team, and is also capable of managing their own time as well as that of others, taking on responsibilities, and meeting deadlines.	[SK5] implementation of a problem task
	[MATMU2_U06] is able to apply methods and examples from a selected field of mathematics in related fields	The student is able to apply mathematical knowledge to formulate, analyze, and solve simple problems related to numerical methods.	[SU2] presentation/project/paper/report
Subject contents	[MATMU2_W04] knows and understands the theoretical basis of computational methods and IT techniques used to solve typical problems in a selected field of mathematics	The student has an in-depth knowledge and understanding of computational methods and is able to comprehend the formulation of problems in this field that are still at the research stage. They are also familiar with the connections between this field and other branches of mathematics.	[SW4] test/exam - oral or written
	Numerical computation errors Systems of linear equations Nonlinear equations Interpolation Functional approximation Numerical integration		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Observation of the student's attitude	51.0%	0.0%
	Exam	51.0%	50.0%
	Laboratory completion	51.0%	50.0%

Recommended reading	Basic literature	Ratajczak, T. (2007). <i>Numerical Methods: Examples and Exercises</i>. Gdańsk: Gdańsk University of Technology Publishing House. Fortuna, Z., Macukow, B., & Wąsowski, J. (2006). <i>Numerical Methods</i>. Warsaw: WNT Publishing.
	Supplementary literature	David Monniaux, The pitfalls of verifying floating-point computations. ACM Transactions on Programming Languages and Systems (TOPLAS), ACM, 2008, 30
	eResources addresses	
Example issues/ example questions/ tasks being completed	not included	
Work placement	Not applicable	

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