

Subject card

Subject name and code	Information Technology, PG_00155390						
Field of study	Mathematics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Bartosz Makuracki				
	Teachers		dr Bartosz Makuracki mgr Jakub Szmelter-Tomczuk				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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		5.0		15.0	50
Subject objectives	Acquiring proficiency in using a spreadsheet to solve mathematical problems, implement simple algorithms and analyze data. Familiarization with software for typesetting mathematical texts and the selected DGS program (dynamic geometry software).						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MATL3_U11] can recognize problems, including practical issues, that can be solved algorithmically; is able to specify such a problem	solve mathematical problems and edit their solutions using the DGS programs and mathematical text editing	[SU2] presentation/project/paper/report
	[MATL3_U14] knows how to use computer programmes in the field of data analysis	uses a spreadsheet for data analysis	[SU5] implementation of a problem task
	[MATL3_W12] knows and understands the principles of occupational health and safety	knows the basic principles of occupational health and safety	[SW1] oral statement/conversation/discussion
	[MATL3_K03] is ready to work in a team; understands the need for systematic work on all projects that have a long-term character	works in a team; understands the need to systematically work on all long-term projects	[SK2] presentation/project/paper/report
	[MATL3_U10] is able to use the known software package or programming language to solve selected issues from the acquired fields, in particular mathematical analysis, linear algebra and statistics	use a spreadsheet to solve tasks from selected areas of mathematics	[SU2] presentation/project/paper/report [SU5] implementation of a problem task
	[MATL3_K04] is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; is willing to act ethically	understands and appreciates the importance of intellectual honesty in one's own and other people's actions; ethical conduct	[SK8] observation of student's independent or team work
[MATL3_W10] knows and understands the basics of computational and programming techniques supporting the work of a mathematician and understands their limitations	Knows and understands the basics of computational and programming techniques supporting the work of a mathematician and understands their limitations.	[SW5] implementation of a problem task	
Subject contents	1. Application of GeoGebra software for visualizing mathematical content and discovering geometric relationships. 2. Using Word software for document editing in math classes - utilizing the Equation tool. 3. Processing numerical data in Excel using mathematical, logical, and financial formulas, and creating diagrams, line charts, and surface charts. 4. Examples of implementing numerical algorithms and data exploration in a spreadsheet. 5. Analysis of statistical data in Excel using pivot tables and charts. 6. Using the Solver tool to solve linear optimization problems. 7. Applying trend lines for approximating measurement data and linear regression for data prediction. 8. Using Solver and trend lines to find extrema of nonlinear functions. 9. Discussion of the basics of the LaTeX system. 10. Application of artificial intelligence tools in typesetting mathematical text.		
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%
	test	51.0%	67.0%
	project	51.0%	25.0%
	activity	51.0%	8.0%
Recommended reading	Basic literature	1. P. Łupkowski, <i>LATEX. Leksykon kieszonkowy</i> , Helion 2007. 2. M. Gonet, <i>Excel w obliczeniach naukowych i technicznych</i> , Helion 2010. 3. A. Obecny, <i>Matematyka w Excelu</i> , Helion 2001. 4. H. Zhou, <i>Eksploracja danych za pomocą Excela</i> , Helion,	
	Supplementary literature	not required	
	eResources addresses		
Example issues/ example questions/ tasks being completed	not required		
Work placement	Not applicable		

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