

Subject card

Subject name and code	Information Technology, PG_00155237						
Field of study	Mathematical Modeling and Data Analysis						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	undergraduate 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 polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Adrian Karpowicz				
	Teachers		dr Adrian Karpowicz				
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. Implementation for using the Linux terminal.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[MMiADL3_K03] is ready to work in a team; understands the need for systematic work on all projects that have a long-term character		The student is ready to work in a team; understands the need to systematically work on all long-term projects.		[SK8] observation of student's independent or team work		
	[MMiADL3_W09] knows and understands the basics of computational and programming techniques supporting mathematician's work and understands their limitations		The student 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		
	[MMiADL3_U09] is able to use the learned software package or the learned programming language to solve selected problems from the known fields, in particular from mathematical analysis, linear algebra and statistics		Is able to use the acquired software package or the acquired programming language to solve selected issues in the acquired fields		[SU5] implementation of a problem task		
	[MMiADL3_U13] knows how to use computer programmes in the field of data analysis		can use a spreadsheet to analyze data		[SU2] presentation/project/paper/report [SU5] implementation of a problem task		

Subject contents	1. Preparing numerical data in Excel using mathematical, logical, financial and static formulas and preparing diagrams, line and area charts. 2. Processing text data in Excel using text formulas, date and time, and data correctness tools. 3. Examples of implementation of numerical algorithms and data mining using Excel. 4. Work with tables using the Vertical Search function and Power Query. 5. Analysis of statistical data in Excel using tables, pivot charts and partial totals. 6. Using the Solver tool to solve linear optimization problems. 7. The use of trend lines to approximate measurement data and linear regression to predict data. 8. Using the Solver tool and trend lines to find extrema of nonlinear functions. 9. Basics of using the Linux terminal. 10. The use of artificial intelligence tools when creating shell scripts in Linux.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	20.0%
	Test	50.0%	75.0%
	Activity	0.0%	5.0%
Recommended reading	Basic literature	Brian Ward, Jak działa Linux: podręcznik administratora, Helion, Gliwice, 2015 Maciej Gonet, Excel w obliczeniach naukowych i technicznych, Helion, 2010. A. Obecny, Matematyka w Excelu, Helion 2001. H. Zhou, Eksploracja danych za pomocą Excela, Helion, 2024.	
	Supplementary literature	not required	
	eResources addresses	Podstawowe https://www.excelszkolenie.pl/ - Online courses: Excel for Advanced and Excel for Experts. Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	not required		
Work placement	Not applicable		

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