



Subject card

Subject name and code	Information Technologies , PG_00021023						
Field of study	Mathematics						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	first-cycle 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 The lecture slides are in Polish, while part of the other teaching resources (books and documentation) are only available in English.		
Semester of study	1		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Paweł Pilarczyk				
	Teachers		dr Adrian Myszkowski dr Joanna Cyman dr hab. Paweł Pilarczyk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	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	45		5.0		25.0	75
Subject objectives	<p>Learning how to use selected features of the computer for mathematical purposes; specifically, acquiring the following abilities and knowledge:</p> <ul style="list-style-type: none">• creating mathematical formulas in office packages,• using spreadsheets for conducting mathematical calculations (including VBA programming) and for data visualization in graphs and diagrams,• using LaTeX for preparing mathematical documents, including presentations and posters,• understanding the basics of encoding characters and numbers in the computer.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W08		The student understands the method used in the computers for binary encoding of characters and numbers (integers and reals).		[SW1] Assessment of factual knowledge		
	K6_U07		The student uses spreadsheet software to solve practical problems. The student can expand the capabilities of a spreadsheet by programming additional functions in VBA, and knows the available data types.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	K6_U10		The student can create mathematical formulas using office software packages. The student is able to create LaTeX documents containing mathematical formulas.		[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		

Subject contents	Lecture: 1. Computer science and information technology. Computer systems. 2. Mathematical formulas in office packages. 3. Conducting calculations using spreadsheet software (including VBA programming) and creating graphs. 4. LaTeX and useful packages, including beamer and tikzposter. 5. Mathematical formulas in HTML: MathJax and MathML. 6. Representing integer and real numbers in the computer. 7. Encoding alphabetic characters: from ASCII to Unicode. Laboratory: Using the e-course Moodle platform. Hands-on experience in using the techniques introduced in the lecture (items 2-5), with emphasis on LaTeX.		
Prerequisites and co-requisites	Computer science lab in secondary school. The ability to use the computer and to work with office software. Basic programming skills.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Hands-on problem solving in the lab	60.0%	70.0%
	Tests and quizzes at the lecture	60.0%	30.0%
Recommended reading	Basic literature	LibreOffice Math Guide 7.2, 2021. https://documentation.libreoffice.org/assets/Uploads/Documentation/en/MG72/MG72-MathGuide.pdf A. Pitonyak, OpenOffice.org macros explained, 3rd Ed., 2016. https://www.pitonyak.org/oo.php LibreOffice Calc Guide 7.2, 2021. https://documentation.libreoffice.org/assets/Uploads/Documentation/en/CG7.2/CG72-CalcGuide.pdf T. Oetiker, The not so Short Introduction to LaTeX 2, 2021. https://www.ctan.org/tex-archive/info/lshort/english/	
	Supplementary literature	M. Alexander, R. Kusleika, J. Walkenbach, Excel 2019 Bible, John Wiley & Sons, Inc., Indianapolis, Indiana, 2018. A. Diller, LaTeX. Line by line, Wiley (2nd Ed.), 1999. L. Lamport, LaTeX. A Document Preparation System. User's Guide and Reference Manual. Addison-Wesley (2nd Ed.), 1994.	
	eResources addresses	Adresy na platformie eNauczanie: Technologie informacyjne 2022 - Moodle ID: 22720 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=22720	
Example issues/ example questions/ tasks being completed	Creating a mathematical formula in an office program. Programming a new function in VBA to be used in a spreadsheet. Creating mathematical slides in LaTeX using beamer.		
Work placement	Not applicable		

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