GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Information Technologies , PG_00021023
Field of study	Mathematics

Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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
Semester of study	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Instytut Matematyki Stosowanej -> Faculty of Applied Physics and Mathematics

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Paweł Pilarczyk
	Teachers	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	Learning how to use selected features of the computer for mathematical purposes; specifically, acquiring the following abilities and knowledge: • 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_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_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_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 and a Web browser. 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 7.5, 2023. https://nextcloud.documentfoundation.org/s/mQWELLbAX9R52MN/download/MG75-MathGuide.pdf
		A. Pitonyak, OpenOffice.org macros explained, 3rd Ed., 2016. hhttps://www.pitonyak.org/OOME_3_0.pdf
		LibreOffice Calc Guide 7.5, 2023. https://nextcloud.documentfoundation.org/s/nwyEYBmQTS9B6pk/download/CG75-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:

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		