GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Information Technologies , PG_00021023		
Field of study	Mathematics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
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	Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Paweł Pilarczyk	
	Teachers	dr hab. Paweł Pilarczyk	

Lesson types

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

eNauczanie source addresses:

Moodle ID: 5567 Technologie Informacyjne 2026
https://enauczanie.pg.edu.pl/2025/course/view.php?id=5567

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:

(a) creating mathematical formulas in office packages,

(b) using spreadsheets for conducting mathematical calculations (including VBA programming) and for data visualization in graphs and diagrams,

(c) using LaTeX for preparing mathematical documents, including presentations and posters,

(d) 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.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
K6_U10	The student can create mathematical formulas using office software packages. The student is able to create LaTeX documents containing mathematical formulas.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Course content – 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.

Course content – laboratory

Using the e-course Moodle platform.

Hands-on experience in using the techniques introduced in the lecture (items 2-5), with an 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, familiarity with any programming language (Scratch would be enough), including the understanding of such notions as loops, conditional statements, variables, functions, tables/lists.

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 25.2, 2025 (or a newer version).
https://nextcloud.documentfoundation.org/s/YdWCtyqaGDTYpbn/download/MG252-MathGuide.pdf

A. Pitonyak, OpenOffice.org macros explained, 3rd Ed., 2016.
https://www.pitonyak.org/OOME_3_0.pdf

LibreOffice Calc Guide 25.2, 2025 (or a newer version).
https://nextcloud.documentfoundation.org/s/fc8c5EMR9X2RWop/download/CG252-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. M.R.C. van Dongen, LaTeX and Friends, Springer, 2012. Access to this book is provided from the Gdańsk Tech network: https://link.springer.com/book/10.1007/978-3-642-23816-1 G. Grätzer, Practical LaTeX, Springer, 2014. Available as PDF and EPUB: https://link.springer.com/book/10.1007/978-3-319-06425-3 G. Grätzer, More Math into LaTeX, Springer, 2016. An earlier edition (2007) is available online: https://link.springer.com/book/10.1007/978-0-387-68852-7 G. Grätzer, Text and Math Into LaTeX, Springer, 2024.
	eResources addresses	
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. Typesetting a sample text containing mathematical formulas using the LaTeX system. Creating mathematical presentation in LaTeX using the beamer package.	
Practical activites within the subject	Not applicable	

Document generated electronically. Does not require a seal or signature.