GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Information Technologies , PG_00021023		
Field of study	Mathematics		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
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 -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Paweł Pilarczyk	
	Teachers	mgr inż. Katarzyna Tessmer dr inż. Justyna Signerska-Rynkowska dr hab. Paweł Pilarczyk dr Joanna Cyman	

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_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

<table>
<tr><td>Subject contents</td><td>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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>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.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Hands-on problem solving in the lab</td><td>60.0%</td><td>70.0%</td></tr><tr><td>Tests and quizzes at the lecture</td><td>60.0%</td><td>30.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>LibreOffice Math Guide 7.5, 2023 (or a newer version). 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 (or a newer version). 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/</td></tr><tr><td>Supplementary literature</td><td>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.</td></tr><tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>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.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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