GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Information Technologies , PG_00021023		
Field of study	Mathematics		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2021/2022
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	blended-learning
Year of study	1	Language of instruction	Polish The lecture slides are in Polish, but all the other teaching resources (books and documentation) are available in English.
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 Joanna Cyman mgr inż. Jakub Ciesielski dr Adrian Myszkowski 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: 15.0						
	Adresy na platformie eNauczanie: Technologie informacyjne - Moodle ID: 16497 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16497						

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: • 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 binary system and the way numbers are stored and used by the computers.

Learning outcomes

Course outcome	Subject outcome	Method of verification
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
K6_U07	The student uses spreadsheet software to solve practical problems.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
K6_W08	The student understands the binary system and the ways computers calculate. The student knows limitations of the computers in making calculations.	[SW1] Assessment of factual knowledge

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. Coding 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.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Tests and quizzes at the lecture	60.0%	30.0%
Hands-on problem solving in the lab	60.0%	70.0%

Recommended reading

Basic literature	LibreOffice Math Guide 7.0, 2020. https://documentation.libreoffice.org/assets/Uploads/Documentation/en/MG7.0/MG70-MathGuide.pdf A. Pitonyak, OpenOffice.org macros explained, 3rd Ed., 2016. https://www.pitonyak.org/oo.php LibreOffice Calc Guide 7.0, 2020. https://documentation.libreoffice.org/assets/Uploads/Documentation/en/CG7.0/CG70-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	Podstawowe https://documentation.libreoffice.org/en/english-documentation/ - Documentation of the LibreOffice software package. Technologie informacyjne - Moodle ID: 16497 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16497

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. Converting a real number from the decimal system to the binary one.
Work placement	Not applicable