

**COURSE SPECIFICATION**

Course code	full-time programme:	M#2-S1-ME-111
	part-time programme:	
Course title in Polish	Zastosowania informatyki	
Course title in English	Applications of Computer Science	
Valid from (academic year)	2024/2025	

GENERAL INFORMATION

Programme of study	MECHANICAL ENGINEERING
Level of qualification	first-cycle
Type of education	academic
Mode of study	full-time programme
Specialism	all
Department responsible	Department of Mechatronics and Weapons Engineering
Course leader	prof. dr hab. inż. Zbigniew Koruba
Approved by	dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering

COURSE OVERVIEW

Course type		programme-specific
Course status		compulsory
Language of instruction		English
Semester of delivery	full-time programme	Semester I
	part-time programme	
Pre-requisites		
Examination required (YES/NO)		NO
ECTS value		2

Mode of instruction		lecture	class	laboratory	project	seminar
No. of hours per semester	full-time programme	15		15		
	part-time programme					

LEARNING OUTCOMES

Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
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Knowledge	W01	The student has structured, advanced knowledge of functions, operations, and instructions in a mathematical calculation program.	MiBM1_W01
	W02	The student has structured advanced knowledge of programming, numerical and symbolic calculations, as well as inserting and formatting graphs using a mathematical calculation program.	MiBM1_W01 MiBM1_W09
Skills	U01	The student is able to perform numerical and symbolic calculations supported by a mathematical calculation program.	MiBM1_U01 MiBM1_U02 MiBM1_U12
	U02	The student is able to define variables and functions, as well as insert and format graphs in a mathematical calculation program.	MiBM1_U01 MiBM1_U02 MiBM1_U12
	U03	The student is able to create programs using programming elements.	MiBM1_U01 MiBM1_U02 MiBM1_U12
Competence	K01	The student is available to verify his/her knowledge and professional certificate through, among others: second and final cycle studies, postgraduate studies, as well as participants in professional courses.	MiBM1_K01
	K02	The student has the opportunity to supplement his knowledge in the field of programming due to their rapid development.	MiBM1_K03

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	Introduction to the program enabling engineering calculations, as well as familiarization with its basic elements. Defining variables and functions. Numerical and symbolic calculations. Calculations on matrices. Methods of solving equations and systems of equations. Implementation of popular algorithms in the program for engineering calculations and their visualization.
laboratory	Conducting laboratory exercises in an engineering calculation program on the following topics: Introduction to the program. Matrices and vectors. Scripts. Conditional and selection statements. Multiple repetition statements. Defining functions. Creating 2D graphs. Solving equations and systems of equations. Operations on polynomials. Symbolic calculations.

ASSESSMENT METHODS

Outcome code	Methods of assessment (Mark with an X where applicable)					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
W02			X			
U01			X			
U02			X			
U03			X			
K01						X
K02						X

ASSESSMENT TYPE AND CRITERIA



Mode of instruction	Assessment type	Assessment criteria
lecture	blad	Successful completion of the final colloquium. Obtaining at least 50% of points.
laboratory	non-examination assessment	Passing tests successfully. The final grade is an arithmetic expression.

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
		L	C	Lb	P	S	L	C	Lb	P	S	
1.	Scheduled contact hours	15		15								h
2.	Other contact hours (office hours, examination)	2		2								h
3.	Total number of contact hours	34										h
4.	Number of ECTS credits for contact hours	1,4										ECTS
5.	Number of independent study hours	16										h
6.	Number of ECTS credits for independent study hours	0,6										ECTS
7.	Number of practical hours	25										h
8.	Number of ECTS credits for practical hours	1										ECTS
9.	Total study time	50										h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>	2										ECTS

READING LIST

1. Sokół M.: Mathcad: leksykon kieszonkowy, Wydawnictwo Helion, 2005.
2. Paleczek W.: Mathcad 12, 11, 2001i, 2001, 2000 w algorytmach, Akademicka Oficyna Wydawnicza Exit, 2005.
3. Regel W.: Mathcad: przykłady zastosowań, Wydawnictwo MIKOM, 2004.
4. Motyka R.: Mathcad: od obliczeń do programowania, Wydawnictwo Helion, 2012.
5. Kucharski T.: Programowanie obliczeń inżynierskich, Wydawnictwo Politechniki Gdańskiej, 2000.
6. <https://smath.com/en-US/view/SMathStudio/summary>
7. Białoń T.: Mathcad. Zbiór zadań dla inżynierów, Wydawnictwo Helion, 2021.

