GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00069725		
Field of study	Informatyka I		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Structural Mechanics -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Izabela Lubowiecka	
	Teachers		

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 address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40022

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	0.0	0.0	45

Subject objectives

1. Matlab programming and using of MATLAB environment
2. Application of Matlab language in solving engineering problems
3. Programming in Python
4. Application of programmig tools in transport

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] able to use IT graphic techniques suitable for tasks typical of designing, construction, operation, and diagnosing means and transportation systems.	1. Ability to use Matlab language in solving engineering problems 2. Ability to use Matlab libraries 3. Skills in Python application to solving problems engineering.	[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU4] Ocena umiejętności korzystania z metod i narzędzi [SU2] Ocena umiejętności analizy informacji [SU1] Ocena realizacji zadania
[K6_W03] has knowledge of informatics, electronics, telecommunications, automation and control, information technologies, computer graphics, geodesy and satellite navigation which is useful for understanding how it can be applied in transport	1. Basic knowledge about general concepts of computer science 2. Knowledge of the bases of programming. 3. The ability to implement and solve an engineering problem in a programming language.	[SW1] Ocena wiedzy faktograficznej

<table>
<tr><td>Subject contents</td><td>Course content – lecture
1. Basic programming concepts, algorithms, data structures.
2. Basics of Matlab language - general information; environment and use of the Matlab environment, libraries and tools;
language syntax and basic instructions; definitions of variables, arithmetic operators; operations of entry / exit; linear algebra; graphics; control instructions; script construction; applications for analysis engineering problems.

3. Basics of the Python language - basic instructions; the basics of programming; scripts, applications language for controlling software of an engineering nature used in the field of transport.

Course content – laboratory
1. Working in the Matlab environment. Language syntax and basic instructions; variable definitions, arithmetic operators; input/output operations; linear algebra; graphics; control instructions; scripting; applications to the analysis of engineering problems. Programming engineering problems related to transportation. Program design, development of a solution algorithm, implementation in Matlab, and preparation of procedures for testing the implemented code.

2. Python basics - basic instructions; programming basics; scripting; applications of the language to control engineering software used in the field of transportation.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>1. Skills in using computers.
2. Basics of linear algebra.</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>Matlab</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Python</td><td>60.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1. Basic material will be available at the universoty website service OKNO or during the labs hours.
2. Lubowiecka I., Ambroziak A. [2016]: Matlab and its evironment, Gdańsk University of Technology Publisher, Gdańsk. [in Polish]
3. Jankowski R., Lubowiecka I., Witkowski W. [2003]: Basic programming in Matlab language, skrypt, Gdańsk. [in Polish]
4. MATLAB-The Language of Technical Computing. Users manual.
5. Pratap R. [2009]: Matlab 7 dla naukowców i inżynierów. PWN, Warszawa.
6. Chris Fehily: Po prostu Python. Helion 2002.</td></tr>
<tr><td>Supplementary literature</td><td>1. Zalewski A., Cegiełka R.: Matlab - numerical calculation and application. Wydawnictwo Nakom, Poznań 1997. [in Polish]
2. Harel D. [1992]: Rzecz o istocie informatyki. [in Polish]</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Scripting in Matlab and Python (solving of an engineering problem).
2. Implementation of the specified algorithm in Matlab and Python.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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