GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Modern Computational Tools II, PG_00047693		
Field of study	Automatic Control, Cybernetics and Robotics		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Decision Systems and Robotics -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Michał Czubenko	
	Teachers	dr hab. inż. Michał Czubenko Michał Kopczyński	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	0.0	0.0	30

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	30	2.0	18.0	50

Subject objectives

Mastering the skills of programming in languages: MATLAB and Python, and tools associated with them.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	is able to implement advanced IT systems to control the manipulator	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	can implement appropriate algorithms in a high-level programming language	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Subject treats about advanced usage of MATLAB, Simulink, Python scripting language in scientific projects.

Prerequisites and co-requisites

- has a basic knowledge of mathematics, including calculus, algebra, geometry, probability and numerical methods, necessary to the description, analysis and synthesis of automatics and robotics systems, and the fundamental processes taking place in them
- knows the problems associated with the implementation of the numerical methods, has knowledge of genetic algorithms and optimization
- knows the principles of object-oriented programming

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Lab exercise</td><td>60.0%</td><td>35.0%</td></tr>
<tr><td>Project</td><td>50.0%</td><td>65.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>http://www.mathworks.co.uk/help/index.html

http://www.python.org/doc/</td></tr>
<tr><td>Supplementary literature</td><td>http://www.mathworks.co.uk/help/index.html

http://www.python.org/doc/</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

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