



## 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 2024	Academic year of realisation of subject			2026/2027		
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 inż. Michał Czubenko					
	Teachers	dr inż. Michał Czubenko					
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	<ul style="list-style-type: none"> <li>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</li> <li>knows the problems associated with the implementation of the numerical methods, has knowledge of genetic algorithms and optimization</li> <li>knows the principles of object-oriented programming</li> </ul>						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lab exercise	60.0%	35.0%
	Project	50.0%	65.0%
Recommended reading	Basic literature	<a href="http://www.mathworks.co.uk/help/index.html">http://www.mathworks.co.uk/help/index.html</a>  <a href="http://www.python.org/doc/">http://www.python.org/doc/</a>	
	Supplementary literature	<a href="http://www.mathworks.co.uk/help/index.html">http://www.mathworks.co.uk/help/index.html</a>  <a href="http://www.python.org/doc/">http://www.python.org/doc/</a>	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		