



Subject card

Subject name and code	Numerical methods in the LabVIEW environment , PG_00057513						
Field of study	Nanotechnology						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2022/2023		
Education level	second-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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marek Chmielewski				
	Teachers		dr inż. Marek Chmielewski				
			dr hab. inż. Leszek Piotrowski				
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: 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	45		2.0		3.0	50
Subject objectives	The aim of the course is to prepare students to effectively use LabVIEW environment used as a tool for advanced digital signal processing						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_W05		The student is able to design computational algorithms and implement them directly in the programming environment. He/ she can use tools from the Advanced Signal Analyzer package in LabVIEW. The student can effectively scale models of digital computing algorithms.		[SW1] Assessment of factual knowledge		
	K7_U03		The student applies simple as well as advanced algorithms for digital signal processing. He/she learns the capabilities of software that enables the application of such algorithms. The student can effectively use ready software libraries. The student can effectively adapt working programs to specific solutions.		[SU1] Assessment of task fulfilment		
	K7_U05		The student will know the capabilities of different measurement techniques, discovers and suggests the possibility of their effective use in areas other than those performed during the lab. Learns software capabilities for advanced digital signal processing		[SU5] Assessment of ability to present the results of task		

Subject contents	The course contents include a comprehensive use of the LabVIEW package in the field of wide-area digital signal analysis. Methods of digital signal filtering, techniques of effective interpolation and extrapolation will be presented and tested. Activities in the field of mathematical processing of digital signals including integration and differentiation procedures, filtering using the Fourier transform and wavelet analysis, also in the time domain. Techniques for parameterization of noise signals will be presented.		
Prerequisites and co-requisites	Basic knowledge of LabVIEW programming environment		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Projets in LV	100.0%	100.0%
Recommended reading	Basic literature	Website www.NI.com "Introduction to digital signal processing" Author: Lyons Richard G.	
	Supplementary literature	non	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	FFT, SFFT, RMS, DC analysis		
Work placement	Not applicable		