GDAŃSK UNIVERSITY OF TECHNOLOGY

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 Analazer 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

<table>
<tr><td>Subject contents</td><td>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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of LabVIEW programming environment</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>Projets in LV</td><td>100.0%</td><td>100.0%</td></tr>
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<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Website www.NI.com

"Introduction to digital signal processing" Author: Lyons Richard G.</td></tr>
<tr><td>Supplementary literature</td><td>non</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>FFT, SFFT, RMS, DC analysis</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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