Subject card

Subject name and code	System Identification II, PG_00047415
Field of study	Automatic Control, Cybernetics and Robotics

Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study
			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	English
Semester of study	2	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department Of Automatic Control -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej
Name and surname of lecturer (lecturers)	Subject supervisor — dr inż. Piotr Kaczmarek
	Teachers — dr inż. Piotr Kaczmarek

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	15.0	0.0	15
	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	15	2.0	8.0	25

Subject objectives	Practical applications of identification methods

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	Student can use identification methods for signal processing.	[SU1] Assessment of task fulfilment
	[K7_U03] can design, according to required specifications, and make a complex 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	The student is able to choose the appropriate tools to the task of process identification. The student is able to evaluate the computational complexity of identification algorithms.	[SU1] Assessment of task fulfilment
	[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	The student can implement advanced signal processing algorithms.	[SU1] Assessment of task fulfilment

Subject contents	Project 1: Comparison of parametric and nonparametric spectrum estimation methods - 7 h. 1.1. Splitting recorded word into separate characters 1.2. Implementation of a Hamming window 1.3. Design of a program for parametric spectrum estimation using the Durbin-Levinson procedure 1.4. Design of a program for nonparametric spectrum estimation using the FFT procedure 1.5. Comparison of resulting spectrums 1.6. Description of the final program Project 2: Application of system identification to elimination of impulsive disturbances from audio signals - 8 h. 2.1. Design of a procedure for handling WAVE audio files 2.2. Design of a procedure for AR-based prediction of audio signals 2.3. Design of a procedure for prediction-based detection of impulsive disturbances 2.4. Design of a procedure for AR-based reconstruction of a fragment of an audio signal 2.5. Design of a disturbance elimination program using the available procedure 2.6.Evaluation of restoration results (using recordings provided by the supervisor) 2.7. Description of methods and algorithms used to solve the problem – written report 2.8. Description of the final program
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Documentation	55.0%	20.0%
	The effect of the implemented software	55.0%	80.0%

Recommended reading	Basic literature	Söderström T. Stoica P. "Identyfikacja Systemów" PWN 1997
	Supplementary literature	No requirements
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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