



## Subject card

Subject name and code	Technical Aspects of Signal Processing, PG_00048382						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
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	2	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Marine Electronic Systems -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Jan Schmidt				
	Teachers		dr inż. Jan Schmidt				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	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		4.0		16.0	50
Subject objectives	The aim of the course is to familiarize students with the technical aspects of signal processing using various hardware platforms.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W03] Knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum.	The student knows and understands the ways of implementing digital signal processing systems.	[SW1] Assessment of factual knowledge
	[K7_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions	The student has the ability to use programming tools and measuring equipment in order to conduct research.	[SU4] Assessment of ability to use methods and tools
	[K7_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	The student knows and understands the techniques of software development for digital signal processing systems.	[SW1] Assessment of factual knowledge
	[K7_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, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it	The student has the ability to use tools for implementing signal processing algorithms.	[SU1] Assessment of task fulfilment
Subject contents	<ol style="list-style-type: none"> <li>1. Fixed-point arithmetic</li> <li>2. Floating point arithmetic</li> <li>3. Computational algorithms</li> <li>4. Methods for implementing algorithms in real-time</li> <li>5. Characteristics of target platforms</li> <li>6. Programmable logic circuits</li> <li>7. Signal processors</li> <li>8. General purpose processors</li> <li>9. Single-core and multi-core implementations</li> <li>10. Simulation tools</li> </ol>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	60.0%	60.0%
	Project	60.0%	40.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. R. Chassaing, "Digital Signal Processing and Applications with the TMS320C6713 and TMS320C6416 DSK". Wiley-IEEE Press 2008</li> <li>2. S.A. Tretter, "Communication System Design Using DSP Algorithms: With Laboratory Experiments for the TMS320C6713™ DSK". Springer 2008</li> <li>3. Roger Woods, "FPGA-based Implementation of Signal Processing Systems". Wiley 2017.</li> </ol>	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		