



Subject card

Subject name and code	Digital Technology II, PG_00047553						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2027/2028	
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	2	Language of instruction				Polish	
Semester of study	4	ECTS credits				1.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Automatic Control -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marcin Pazio				
	Teachers		dr inż. Marcin Pazio				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	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		1.0		9.0	25
Subject objectives	The aim of the course is to gain knowledge on how to describe digital circuits and methods for their design using programmable systems and VHDL language.						
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		The student knows how to design a digital programmable system with specific functionality and set parameters.			[SU4] Assessment of ability to use methods and tools	
Subject contents	Course content – lecture 1. Memories: structures and addressing 2. Programmable modules: PLAs, PALs and PROMs 3. Programmable modules: CPLDs, FPGAs 4. Computer aided design of digital circuits: methodology and languages 5. VHDL: – structure and general overview of the language 6. VHDL: – declaring entities 7. VHDL: – describing architectures 8. VHDL: – constants, signals, files, aliases 9. VHDL: – waveform generation, propagation times 10. VHDL: – data types and attributes 11. VHDL: – operators, overloading of operators 12. VHDL: – combinational and clocked processes, variables vs. signals 13. VHDL: – describing Moore-type sequential circuits 14. VHDL: – describing Mealy-type sequential circuits 15. VHDL: – libraries and packages 16. VHDL: – exemplary construction of a package						
Prerequisites and co-requisites	No requirements						
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
	Midterm colloquium		51.0%			100.0%	
Recommended reading	Basic literature		Katalogi firmowe M. Barski, W. Jędruch Układy cyfrowe, podstawy projektowania i opis w języku VHDL, Wydawnictwo Politechniki Gdańskiej 2007 M. Zwoliński Projektowanie układów cyfrowych z wykorzystaniem języka VHDL, WKiŁ 2007 P. Zbysiński, J. Pasierbiński Układy programowalne w praktyce, WKiŁ 2002 Zasoby Internetu				
	Supplementary literature		No requirements				

	eResources addresses	
Example issues/ example questions/ tasks being completed		
Practical activities within the subject	Not applicable	

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