GDAŃSK UNIVERSITY OF TECHNOLOGY

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 2025	Academic year of realisation of subject	2026/2027
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 -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Pazio	
	Teachers	dr inż. Marcin Pazio	

Lesson types and methods of instruction

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

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	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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