GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Logical Circuits - laboratory, PG_00048808		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	first-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	Polish
Semester of study	2	ECTS credits	2.0
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	0.0	0.0	30.0	0.0	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	2.0	18.0	50

Subject objectives

The class of logic students acquire knowledge of:

- The mathematical systems used to describe iterative combination and sequence combination

- Introduction to binary, binary, Boolean algebra arytmetyka's logical functions

- Basic concepts, systems, systems iterative

- Synthesis of sequential iterative and sequence

- Synthesis of synchronous and asynchronous sequential Circuits

- memory

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_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 technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	Student after class of TC lab is able to analyze the digital system and propose and carry out tests to assess the correct functioning of the digital system.	[SU2] Assessment of ability to analyse information
[K6_U08] while identifying and formulating specifications of engineering tasks related to the field of study and solving these tasks, can:n- apply analytical, simulation and experimental methods,n- notice their systemic and non-technical aspects,n- make a preliminary economic assessment of suggested solutions and engineering work n	Student after lab classes can design, according to the specified specification, and perform typical digital systems a simple device, object, system or process, using appropriately selected methods, techniques, tools and materials, using standards and Engineering standards, using technology-specific technologies and using the experience gained in an environment of professional engineering activities	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_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	Student after class of TC lab knows the principle of operation of programmable systems and is able, based on the description of these systems, to program these systems in accordance with the set purpose of the system.	[SU1] Assessment of task fulfilment
[K6_U07] can apply methods of process and function support, specific to the field of study	Student after class of TC lab can design a simple device that performs given functions using appropriately selected methods, techniques, tools and materials.	[SU1] Assessment of task fulfilment

Subject contents

1. TTL and CMOS gates testing 2. Designing, assembling and testing iterative circuits 3. Designing and assembling digital timing circuits 4. Designing synchronous sequential circuits 5. Assembling and testing synchronous sequential circuits 6. Designing counter modules 7. Assembling and testing counter modules 8. Designing, assembling and testing register modules 9. Designing asynchronous sequential circuits 10. Assembling and testing asynchronous sequential circuits 11. Microprogramming: coding data interchange between digital modules 12. Microprogramming: implementing the code from ex.11 13. Prototyping digital circuits: designing various projects 14. Assembling projects from ex.13 15. Prototyping: testing projects from ex.14

Prerequisites and co-requisites

No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam	50.0%	40.0%
activity / presence	50.0%	10.0%
Midterm colloquium	50.0%	50.0%

Recommended reading

Basic literature	R. F. Tinder, Engineering Digital Design J. D. Daniels, Digital Design from Zero to One Texas Instruments, Digital Design Seminar
Supplementary literature	No recommendations
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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