

Subject card

Subject name and code	Teleinformatic networks, PG_00037345								
Field of study	Technical Physics								
Date of commencement of studies	October 2022		Academic year of realisation of subject			2024/2025			
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	at the university		
Year of study	3		Language of instruction			Polish	Polish		
Semester of study	5		ECTS credits			4.0	4.0		
Learning profile	general academic pro	Assessment form			assessment				
Conducting unit	Katedra Fizyki Teoretycznej i Informatyki Kwantowej -> Faculty of Applied Physics and Mathematics								
Name and surname	Subject supervisor		dr inż. Bartosz Reichel						
of lecturer (lecturers)	Teachers		dr inż. Bartos	. Bartosz Reichel					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	15.0	0.0	30.0	0.0	0.0		45	
	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	45		10.0		45.0		100	
Subject objectives	Acquainted with the basic methods of data transmission, division of ICT equipment. Layer model of the ISO / OSI network.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K6_U02		Implement of basic control sum			[SU2] Assessment of ability to analyse information			
	K6_U03		Understanding the operation of the network based on ISO / OSI model			[SU1] Assessment of task fulfilment			
	K6_K01		Student is aware of his strengths and weaknesses			[SK5] Assessment of ability to solve problems that arise in practice			

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Assessment methods and criteria	Subject contents								
1) Implementation of algorithms; parity bit, modulo sum, CRC 2) The breakdown of the data on to packets, analysis of impact of the size of the header to the size of the package 3) Implementation of minimum spanning tree algorithms 4) Tracking and analysis of the network traffic Lectures: 1. Elements of data transmission Channel, signal, information and modulation; parameters and characteristics. Spectrum, bandwidth, Modulation rate; transmission speed, propagation rate. Synchronous and asynchronous transmission. Receiver synchronization and transmission coding. Error models in transmission channels, elementary error rate. Detection and correction codes Parity bit and CRC. 2. LAN and WLAN. Estimated (IEEE 802.3): access rule for common medium, device addressing, bechnologies and parameters, structured cabling, devices thub, ewitch). Fast: (IEEE 802.3) and Gigabit Ethernet (IEEE 802.3 ab / z). Minimal spanning tree (STP). Other solutions: Token Ring and FDDI (IEEE 802.5): 3. Access network. Access channels: V.24 (RS232), USB, V.21-V.92 modems, ISDN, ADSL and HDSL modems. Parameters and ranges of application. 4. MAN and WAN network. Analog and digital connections: PDH and SDH telecommunications hierarchy. FrameRelay network: principle of operation, layered model, permanent and switched virtual connection, parameters and costs of application. Alm hetwork operation, principle of operation, layered model, permanent and switched virtual connection, parameters and costs of application. 5. Protocols and services in ICT networks Protocol definition and protocol classification. Protocols in layered models. Ethernet II ARP ICMP IPP IDP IDP IDP AND IDP IDP ON I									
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TTOIR PRODUITION	Work placement	Not applicable							

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