GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Transmission and Switching Technology - laboratory, PG_00048129		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2024	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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Teleinformation Networks -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Magdalena Młynarczuk	
	Teachers	dr inż. Magdalena Młynarczuk	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	15.0	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

Transfer of practical knowledge concerning the transmission and switching techniques, including channel-switching and packet-switching, implementation of spatial and time switching and techniques used for the transmission of digital signals and standards related to digital transmission.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U31] can identify telecommunications network architectures, differentiates their areas and functional elements, evaluates the quality of service delivery, calculates parameters of functional elements	Student develops process control for the space switch. Student analyzes the properties of two- and three-section switching fabrics. Student assesses the impact of interference and distortion on the quality of digital transmission	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
[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 is able to make a critical analysis of technical solutions for transmission links and switching nodes, evaluate these solutions	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
[K6_W35] Knows the concepts of the technique of signal transmission, operation of telecommunications networks and multimedia services and the rules for providing them	Student knows the concepts of signal transmission technology in telecommunication networks and switching nodes in the network and the rules for their implementation	[SW1] Assessment of factual knowledge
[K6_W34] Knows the characteristics of telecommunications channels, methods of securing information, modulation systems, methods of access to the channel.	Student knows the characteristics of digital channels, information coding methods, digital modulations, ways to access the channel	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td colspan="3">1. Examination of transmission techniques on the copper lines 2. Evaluation of transmissions properties for xDSL systems in access network 3. Evaluation of properties of interfaces and regenerative repeaters in transmission systems 4. Realization and control for digital space switch 5. Realization and control for bi-stage digital switching field 6. Evaluation of packet switching process in packet switching network model 7. Software control for given structure of tri-stage switching field</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Practical exercise</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Kula. S.: Systemy teletransmisyjne, WKL, 2004

Jajszczyk A.: Wstep do telekomutacji, WNT, 2000</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Horak R.: Telecommunications and data communications handbook John Wiley, 2007</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Baseband transmission with echo cancellation (SHDSL system)

The properties of interfaces and regenerative repeaters for the E1 signal

Control of switching process between subscriber and receiver of digits

Realization of packet switching function by the node IP QoS - 8x8 spatial switch</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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