GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Telecommunication Systems and Networks II, PG_00047921		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Teleinformation Networks -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Narloch	
	Teachers	dr inż. Marcin Narloch	

Lesson types

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

Practical familiarize of student with the functioning of interfaces, protocols and implementation of telecommunication services for digital network with circuit switching and packet switching. Understanding the basic principles of practical network dimensioning for transmission part and switching nodes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U07] can apply methods of process and function support, specific to the field of study	Student is able to use methods supporting processes and functions, specific to issues related to telecommunications systems and networks	[SU4] Assessment of ability to use methods and tools
[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 is able to use analytical and experimental methods, see their system and non-technical aspects, make a preliminary assessment and selection of proposed system solutions	[SU4] Assessment of ability to use methods and tools [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 the functioning of existing technical solutions in telecommunications systems and networks and assess the functionality of these solutions as well as take advantage of experience related to the maintenance of telecommunications equipment and systems	[SU3] Assessment of ability to use knowledge gained from the subject

<table>
<tr><td>Subject contents</td><td>Course content – laboratory
Reach of digital transmission systems for copper pair
Transmission distance for optical link and / or the optical path.
Capacity dimensioning of the interface between nodes
Dimensioning of switching node equipment
Dimensioning of unidirectional SDH ring
Dimensioning of bidirectional SDH ring
The physical layer for the S/T and U point in the BRA-ISDN access.
The physical layer for the E1 interface of the PCM30 track.
Frame and multiframe structure of the PCM30 system.
Service scenario of the connection in the PSTN/ISDN network.
Signaling messages for DSS1.
Signaling messages for SS7 ISUP.
Teleservices and supplementary services in networks with circuit switching.
Teleservices and supplementary services in networks with the packets switching.
The access to broadband services in ADSL system.
The simultaneous access to services of PSTN/ISDN network and IP network.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<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>50.0%</td></tr>
<tr><td>Project</td><td>50.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Material prepared by the lecturer in the form of xeroxcopy. Manual in the form of xeroxcopy.</td></tr>
<tr><td>Supplementary literature</td><td>Horak R.: Telecommunications and data communications handbook John Wiley, 2007

Kula S.: Systemy teletransmisyjne, WKL, Warszawa 2004</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>The TDM network Interfaces
Teleservices and supplementary services in ISDN
Telephone services in IP networks
Dimensioning of access network PSTN / ISDN
Dimensioning of equipment of access node
Design of optical SDH rings
Reach of optical transmission
Designing of WDM optical ring</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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