



## Subject card

Subject name and code	QoS Packet Networks Design, PG_00048358						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	1	Language of instruction			Polish		
Semester of study	2	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 hab. inż. Sylwester Kaczmarek					
	Teachers	dr hab. inż. Sylwester Kaczmarek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	15.0	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		2.0		8.0	25
Subject objectives	Transfer of knowledge necessary to design packet networks with traffic quality classes taking into account optical transport technologies.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U03] can design, according to required specifications, and make a complex 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 is realizing the team project out for three plains of the technology starting from the package IP network and having finished on the DWDM technology.			[SU1] Assessment of task fulfilment		
	[K7_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 advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	The student is designing resources quantitatively on the level of the network and the node including applied technologies on different plains. The design is taking into account the existing of classes of the quality of services and the cooperation of techniques with the switching of packages and channels.			[SU1] Assessment of task fulfilment		
Subject contents	Discussion of the principles of project implementation. Characterization of project tasks. Designing gateways between a classical network and an IP QoS network. Calculation of streams for given classes of traffic sources. Assignment of traffic source classes to IP QoS network service classes. Selection of the routing algorithm and traffic placement in the IP QoS network. Calculation of the required bandwidth of links in the IP QoS network. Designing the SDH/DWDM network layer (variant A) and OTN/DWDM (variant B) that also support IP QoS network traffic. Designing OTN/DWDM networks with link failure. Calculation of quantitative quality parameters for the selected relationship. Designing traffic source control mechanisms. Acceptance and evaluation of completed projects.						
Prerequisites and co-requisites	No requirements						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		Project	50.0%
Recommended reading	Basic literature	Materials prepared by the lecturer available in electronic form in PDF files and in the form of a photocopy (on request).	
	Supplementary literature	No requirements.	
	eResources addresses	Adresy na platformie eNauczenie: Projektowanie sieci pakietowych z QoS - projekt - 2023 - Moodle ID: 31572 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=31572">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=31572</a>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		