

GDAŃSK UNIVERSITY

Subject card

Subject name and code	Fiberoptic Technology in Telecommunications, PG_00048128								
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			3.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Department of Microwave and Antenna Engineering -> Faculty of Electronics, Telecommunications and Informatics								
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Łukasz Kulas						
	Teachers		dr hab. inż. Łı	Jkasz Kulas					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	15.0	0.0	15.0	0.0		0.0	30	
	E-learning hours inclu	uded: 0.0							
Learning activity and number of study hours	Learning activity	Participation ir classes includ plan	I didactic Participation in ed in study consultation hours		n Iours	Self-study		SUM	
	Number of study hours	30		3.0		42.0		75	
Subject objectives	Introduction to design of fiber optic systems with the focus on its most important elements (optical fiber, transmitter, receiver, optical amplifiers, etc.) and testing methods.								
Learning outcomes	Course out	come	Subject outcome			Method of verification			
	[K6_W35] Knows the concepts of the technique of signal transmission, operation of telecommunications networks and multimedia services and the rules for providing them		Theoretical knowledge about concepts, composition, operation, measurements of the most important components of fiberoptic links.			[SW1] Assessment of factual knowledge			
	[K6_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions		Practical skills in analysis, calculation of parameters and basic design of fiber-optic system.			[SU1] Assessment of task fulfilment			
	[K6_W34] Knows the characteristics of telecommunications channels, methods of securing information, modulation systems, methods of access to the channel.		During the lecture student gains knowledge about parameters of optical fibers, optical transmitters and receivers, connectors important to create a complete fiber-optic system.			[SW1] Assessment of factual knowledge			

Subject contents							
	Laster						
	Lecture Introduction to fiberoptic systems Optical fibers – methods of analysis Classification of optical fibers Attenuation in fiberoptic systems Methods of connecting optical fibers Multimodal dispersion in optical fibers Chromatic dispersion in optical fibers Useful bandwidth in optical fibers Useful bandwidth in optical fibers Optical receivers and transmitters Amplifiers in fiberoptic systems Couplers in fiberoptic systems Couplers in fiberoptic links Measurements of fiberoptic links Designing of fiberoptic links Laboratory Introduction to fiberoptic systems - classification of optical fibers, preparation and methods of connecting optical fibers Optical receivers and transmitters Optical fibers Optical receivers and transmitters Optical fibers Optical fibers Multimodal dispersion in optical fibers Useful bandwidth in optical fibers - measurement of attenuation in optical fibers Reflectometer measurement of fiberoptic systems						
Prerequisites and co-requisites	Basic knowledge of optical phenomenons, propagation of electromagnetic waves, modulation techniques and telecommunication systems parameters. Participation in laboratory classes is obligatory.						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	Lecture - final test	50.0%	100.0%				
Recommended reading	Basic literature	A. Ghatak, K. Thyagarajan: Introduction to fiber optics, Oxford University Press, 1998 M. Ilyas: The Handbook Of Optical Communication Networks, CRC Press, 2003 M. Marciniak: Łączność światłowodowa, WKŁ, 1998					
	Supplementary literature	A. Smoliński: Optoelektronika światłowodowa, WKŁ, 1985					
		G.P. Agrawal: Fiber-Optic Communications Systems, John Wiley And Sons, 2002					
		cji światłowodowej, WKŁ, 1997					
	eResources addresses	Adresy na platformie eNauczanie:					
Example issues/ example questions/ tasks being completed							
Work placement	Not applicable						