GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Optoelectronic Devices and Systems - Seminar, PG_00048691		
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Metrology and Optoelectronics -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Małgorzata Szczerska	
	Teachers	prof. dr hab. inż. Małgorzata Szczerska	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	0.0	15.0	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	Students are acquiring knowledge and skills to analyze, design, construction and testing of optoelectronic devices and systems.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W02] Knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of study	The student knows and understands in a deepened degree selected laws and physical phenomena in the field of optics, as well as methods and theories explaining the complex relationships between optical radiation and electric current.	[SW1] Assessment of factual knowledge
	[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 analyzes the operation of typical optoelectronic devices and systems designed in accordance with the given specification,	[SU2] Assessment of ability to analyse information
	[K7_U06] can analyse the operation of components, circuits and systems related to the field of study; measure their parameters; examine technical specifications; interpret obtained results and draw conclusions	The student can analyze the operation of optoelectronic components, systems and measure their parameters and study technical characteristics, interpret the obtained results.	[SU1] Assessment of task fulfilment
	[K7_W03] Knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum.	The student knows and understands the structure and operation of components and optoelectronic systems in a deeper degree, including theories, methods and complex relationships between them.	[SW1] Assessment of factual knowledge
Subject contents	1. Optoelectronic Systems for Applications: - Measurement Techniques, - Industrial Processes monitoring 2. Automatic Control and Robotics, Medical 3. Elements of Optoelectronic Systems: - Sources, Detectors, Optical Devices and Moduls 4. Classification and Characteristics, OE Elements 5. Methodology of optoelectronic systems design: - Requirements, Design Procedure 6. Design Tests, Evaluation of Cost, Design Examples 7. Visualisation of Phase Objects (Phase Contrast, Schlieren Method) 8. Modulation of Light: - Kerr, Pockels Cell Modulators, 9. - Acousto-Optic Modulators, Scanners 10. Review of Interferometers : - Properties, Characteristics 11. - Applications 12. Introduction to Spectral Analysis; Elements, Devices, Systems, 13. Spectral Measurement: passive Objects, Sources, Fluorescent Materials 14. Review of Applications of Optoelectronics Systems 15. Summary		
Prerequisites and co-requisites	No requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Implementation of the scheduled presentations	65.0%	100.0%
Recommended reading	Basic literature	K.J. Gasvik: Optical Metrology, Wiley and Sons, 2002 Mauro Sardela [ed.], Practical Materials Characterization, Springer, 2014 P. Hariharan, Optical Interferometry, Elsevier, 2003	
	Supplementary literature	A set of publications in the field of metrology and various applications of the optoelectronic devices and systems	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		