



Subject card

Subject name and code	Information Visualization Systems, PG_00048087						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024		
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 Metrology and Optoelectronics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Adam Mazikowski				
	Teachers		dr inż. Adam Mazikowski				
			dr inż. Katarzyna Karpienko				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		3.0		27.0	75
Subject objectives	The aim of the course is to introduce students to the field of the Information visualization systems and mastery of the skills of its practical application.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W03] Knows and understands, to an advanced 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		presents basic physical phenomena and technologies of elements of information visualization systems; classifies and differentiates the properties and characteristics of visualization modules; measures electro-optical, spectral and dynamic characteristics of standard displays; evaluates the conditions for the application and selection of visualization modules to the requirements		[SW1] Assessment of factual knowledge		
	[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications		measure selected display characteristics and interpret the results correctly		[SU1] Assessment of task fulfilment		
Subject contents	1. Information Visualisation Systems; Elements, Functions, Properties 2. Displays; Classification, Characteristics, Properties 3. Human Visual System; Photopic, Scotopic Vision, Color Sensation, Colorimetry 4. Colorimetric Systems 5. Photometric and Colorimetric Characteristics of Displays 6. Liquid Crystals; Classification, Mechanical, Optical, Electrical Parameters 7. Electro-optical Phenomena in LC 8. Liquid Crystal Cell Construction 9. Operation of TN 10. Operation of ECB, VAN 11. Operation of PDLC, Guest-Host 12. Operation of STN, DSTN 13. LCD- ferroelectric, antiferroelectric 14. LCD Construction, transmissive, reflective, transfective Modes 15. Optimization of Color LCD 16. Passive Displays static and MUX (multiplexed) Driving 17. Active Matrix TFT LCD - general Considerations 18. Displays AM TFT LCD - addressing, performances, technology 19. LCD Backlights 20. Displays VFD, EL/LED, OLED- Construction, Properties, Applications 21. PDP 22. CRT, FED 23. DMD- DLP 24. Projection Displays, picoprojectors 25. Displays 3D (projection, FPD-3D) 26. Mikro-displays, SLM, Night Vision Systems 27. Jumbo Displays, Digital Cinema 28. Special Displays: HUD, VR, AR, Touch-screen 29. Future Trends of the Information Visualisation 30. Examination						

Prerequisites and co-requisites	No recommendations		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exams	50.0%	70.0%
	Execution of the all laboratory exercises	50.0%	30.0%
Recommended reading	Basic literature	E. Lueder: Liquid Crystal Displays, Wiley 2001	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie: Systemy Wizualizacji Informacji 2023/2024 - Moodle ID: 37235 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37235	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		