GDAŃSK UNIVERSITY OF TECHNOLOGY

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. Colorimetrie Systems 5. Photometric and Colorimetric Characteristics of Displays 6. Liquid Crystals; Classification, Mechanical, Optical, Electrical Parame-ters 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, transflective 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. Specjal Displays: HUD, VR, AR, Touch-screen 29. Future Trends of the Information Visualisation 30. Examination

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">No recomendations</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Exams</td><td>50.0%</td><td>70.0%</td></tr>
<tr><td>Execution of the all laboratory exercises</td><td>50.0%</td><td>30.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">E. Lueder: Liquid Crystal Displays, Wiley 2001</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">No requirements</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:
Systemy Wizualizacji Informacji 2023/2024 - Moodle ID: 37235
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37235</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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