GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Radio Broadcasting and TV, PG_00048130						
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	1.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Department of Radiocommunication Systems and Networks -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Sławomir Gajewski				
	Teachers		dr inż. Sławomir Gajewski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	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		1.0	9.0		25
Subject objectives	The target is the introduction of a student to the principles of radio broadcasting and TV systems construction.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_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 technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	Student can critically evaluate solutions used in TV and radio broadcasting	[SU2] Assessment of ability to analyse information
[K6_W34] Knows the characteristics of telecommunications channels, methods of securing information, modulation systems, methods of access to the channel.	The student knows characteristics of radio communication channels for different frequency bands used in TV and radio broadcasting	[SW1] Assessment of factual knowledge
[K6_U31] can identify telecommunications network architectures, differentiates their areas and functional elements, evaluates the quality of service delivery, calculates parameters of functional elements	Student distinguishes system solutions for various television and radio broadcasting systems	[SU1] Assessment of task fulfilment
[K6_K02] is ready to critically assess possessed knowledge and acknowledge the importance of knowledge in solving cognitive and practical problems	The student is able to critically assess the properties and requirements of various television and radio broadcasting systems	[SK5] Assessment of ability to solve problems that arise in practice
[K6_W35] Knows the concepts of the technique of signal transmission, operation of telecommunications networks and multimedia services and the rules for providing them	Student explains the principles of television and radio broadcasting. Student explains the mechanisms of television image analysis. The student explains the principles of image coding on analog color television. Student distinguishes between analog and digital methods of sound transmission accompanying the image. The student explains the principle of the NICAM encoder. Student explains the construction of an analogue and digital television receiver. Student explains the rules of forming and sampling of television signals on DVB digital television. Student distinguishes analogue and digital radio broadcasting systems.	[SW1] Assessment of factual knowledge

Subject contents

1. Broadcasting on long, medium and short waves, ground and ionospheric signals propagation, useful ranges, disturbances and their sources. 2. Basic characteristics of analog and digital television and radio broadcasting systems. Terrestrial transmission of TV signals. TV signal band, VSB modulation. 3. Picture analysis, TV signal characteristics, TV signal band. Methods of colour TV signal composition, luminance and chrominance signals. Line and field synchronization. Colour synchronization. 4. Fundamentals of colour TV signals processing in PAL standard. 5. Stereophonic and monophonic sound signals composition, stereo sound signals emission. 6. Digital sound signals in the NICAM system. 7. Digital TV systems DVB. Vision signals in digital TV. Digitization of luminance and chrominance signals. MPEG2 compression. 8. Analog and digital TV receivers. Block diagrams. Plasma and LCD flat panel displays. 9. FM broadcasting. Stereophonic signal composition. 10. Additional digital signals in FM broadcasting systems, RDS system and its application. 11. Terrestrial DAB system characteristics. 12. Sound signals compression and multicarrier modulation. 13. Digital broadcasting in HF and MF frequency band. System DRM. 14. Satellite TV, transponder functions and its localizations on orbits. 15. Block diagram of satellite receiver. Transmission of picture and sound signals.

Prerequisites and co-requisites

No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written colloquium, 1 hour. Acceptable oral colloquium for small number of students.	50.0%	100.0%

Recommended reading

Basic literature	Ibrahim K.F.: Newnes Guide To Television And Video Technology, Fourth Edition. Newnes 2007. Trundle E.: Newnes Guide To Television And Video Technology, Third Edition. Newnes, March 2001.
Supplementary literature	No requirements
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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