



Subject card

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|---|---|--|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Fundamentals of Radio Broadcasting and TV, PG_00048130 | | | | | | |
| 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 | | | 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. | | | | | | |

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| Learning outcomes | Course outcome | 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 | 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 |
| | [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_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_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_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 |
| 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: | |

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