



Subject card

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|---|--|--|--------------------------|-------------------------------------|--|------------|-----|
| Subject name and code | Radio Communication Antennas and MIMO Techniques, PG_00048375 | | | | | | |
| Field of study | Electronics and Telecommunications | | | | | | |
| Date of commencement of studies | February 2024 | Academic year of realisation of subject | | | 2024/2025 | | |
| 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 Radiocommunication Systems and Networks -> Faculty of Electronics, Telecommunications and Informatics | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Jarosław Magiera | | | | |
| | Teachers | | dr inż. Jarosław Magiera | | | | |
| 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 | Familiarization with the construction and operation of the main types of radio antennas | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K7_W01] Knows and understands, to an increased extent, mathematics to the extent necessary to formulate and solve complex issues related to the field of study. | Knows and understands the mathematical description used in electromagnetic analysis and design of linear antennas | | | [SW3] Assessment of knowledge contained in written work and projects | | |
| | [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 | Knows and understands physical phenomena occurring in the antenna, associated with the conversion of an electric current into an electromagnetic field and vice versa. | | | [SW3] Assessment of knowledge contained in written work and projects | | |
| | [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. | Knows and understands the structure and operation of various types of radio antennas as well as the structure and operation of MIMO multi-antenna links. | | | [SW3] Assessment of knowledge contained in written work and projects | | |
| Subject contents | 1. Antenna conditions in the radio communication link. 2. Rules for selecting antennas in fixed and mobile link. 3. Omni-directional antennas. 4. Sector antennas. 5. Narrow-beam antennas. 6. Antenna technique in land mobile radiocommunication. 7. Construction of planar antennas. 8. Properties of planar antenna solutions. 9. Antenna technique in permanent satellite communications. | | | | | | |
| Prerequisites and co-requisites | | | | | | | |

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| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Accept | 50.0% | 100.0% |
| Recommended reading | Basic literature | Saunders S.R., Aragon-Zavala A.: Antennas and propagation for wireless communication systems. John Wiley&Sons, 2007 | |
| | Supplementary literature | Lack | |
| | eResources addresses | Adresy na platformie eNauczenie: | |
| Example issues/ example questions/ tasks being completed | Lack | | |
| Work placement | Not applicable | | |