



Subject card

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| Subject name and code | Communication Software for Internet of Things, PG_00063907 | | | | | | |
| Field of study | Informatics | | | | | | |
| Date of commencement of studies | February 2025 | | Academic year of realisation of subject | | | 2025/2026 | |
| Education level | second-cycle studies | | Subject group | | | Optional subject group Specialty 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 | 1 | | Language of instruction | | | Polish | |
| Semester of study | 2 | | ECTS credits | | | 3.0 | |
| Learning profile | general academic profile | | Assessment form | | | exam | |
| Conducting unit | Department of Computer Communications -> Faculty of Electronics, Telecommunications and Informatics | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Wojciech Gumiński | | | | |
| | Teachers | | dr inż. Wojciech Gumiński | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 15.0 | 15.0 | 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 | | 6.0 | | 24.0 | 75 |
| Subject objectives | The aim of the course is to enable students to acquire knowledge and practical skills in the field of methods of designing and implementing communication protocols. | | | | | | |

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| Learning outcomes | Course outcome | Subject outcome | Method of verification |
| | [K7_U08] while identifying and formulating engineering tasks specifications and solving these tasks, can: - apply analytical, simulation and experimental methods, - notice their systemic and non-technical aspects, - make a preliminary economic assessment of suggested solutions and engineering work | Students describe the operation of communication protocols in the SDL language. | [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task |
| | [K7_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it | Students implement unicast and multicast communication protocols using IPv4 and IPv6 protocols. | [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment |
| | [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 | Students describe elements of the Internet of things architecture . | [SW1] Assessment of factual knowledge |
| | [K7_W04] knows and understands, to an increased extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or other elements or programmable devices specific to the field of study, and organization of work of systems using computers or such devices | Student lists and describes the elements of SDL. Student lists the requirements for group communication. | [SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects |
| Subject contents | 1. Introduction, IoT architecture 2. Definition of communication software 3. Introduction to the SDL language, basic features of the SDL language, graphic and text notations of elements of the SDL language 4. Model and structure of the SDL schema 5. Methods of describing the processes using SDL 6. Communication and data transmission between processes 7. Validation of protocols and compliance tests 8. Implementation of SDL projects using popular programming languages 9. Application of SDL notation on the design of an exemplary protocol 10. Use of communication sockets to implement network communication tasks 11. Methods of implementing network protocols using the idea of processes and mechanisms of communication between them 12. Methods of implementing mechanisms to preserve data integrity 13. Methods of implementing mechanisms for verification of compliance with a traffic contract 14. Implementation of security mechanisms for communication protocols 15. Postulates of group communication | | |
| Prerequisites and co-requisites | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Test | 50.0% | 34.0% |
| | Practical exercises | 50.0% | 33.0% |
| | Project | 50.0% | 33.0% |
| Recommended reading | Basic literature | Notes from lectures | |

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| | Supplementary literature | Stevens R.; Unix Programowanie usług sieciowych, WNT 2002 |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | Design of communication protocol. Implementation of unicast communication. Implementation of multicast communication. | |
| Work placement | Not applicable | |

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