



Subject card

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|--|--|--|--|-------------------------------------|--|--|-----|
| Subject name and code | Computer networks - lectures, PG_00045321 | | | | | | |
| Field of study | Data Engineering | | | | | | |
| Date of commencement of studies | October 2020 | Academic year of realisation of subject | | | | 2022/2023 | |
| 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 | | | | English | |
| Semester of study | 5 | ECTS credits | | | | 4.0 | |
| 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 | | prof. dr hab. inż. Józef Woźniak | | | | |
| | Teachers | | prof. dr hab. inż. Józef Woźniak mgr inż. Jakub Grochowski dr inż. Krzysztof Nowicki dr inż. Krzysztof Gierłowski | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30 |
| | E-learning hours included: 0.0 | | | | | | |
| Computer Networks EN 2022 - Moodle ID: 25492 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25492 | | | | | | | |
| 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 | 30 | | 10.0 | | 60.0 | 100 |
| Subject objectives | The student becomes familiar with the network layered logical architectures, classifies the basic problems of network communication and identifies and analyzes selected protocols and mechanisms of LAN and WAN (IP) networks | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | | Method of verification | |
| | [K6_W02] Knows and understands the standards of network management, architecture, technologies and services of telecommunications networks. Knows the main protocols of packet networks, understands the operation of local networks and network connection rules. | | The student has knowledge about basic network architectures and communication protocols. The student knows and understands the mechanisms of creating virtual networks in a LAN environment. The student has knowledge on wired and wireless networks described by the standards of the IEEE 802 series. The student has knowledge on the basic IP network protocols and selected network services and applications | | | [SW1] Assessment of factual knowledge | |
| [K6_U02] designs, analyses correctness and creates functional specification of IT systems, selects appropriate measures, creates quality models, prepares and assesses their design documentation. | | Student describes and compares various network solutions. The student has knowledge of the basic principles and methods of security in networks. The student has knowledge about selected network applications and the principles of their implementation. | | | [SU2] Assessment of ability to analyse information | | |

| Subject contents | 1. Classification and general characteristics of computer networks 2. Layered network architectures - ISO-OSI, TCP / IP 3. LAN networks - general characteristics - classification of access methods 4. Wired solutions of the contention type: Ethernet networks - MAC layer functions and principles of access to the medium - IEEE 802.3 standard 5. Wireless LANs - general characteristics, IEEE 802.11 standard - operating modes and access methods 6. New Ethernet technologies 7. LAN connection methods, VLANs 8. Internetworking 9. Wide area computer networks - WAN networks 10. TCP / IP architecture - IP protocols and UDP / TCP transport protocols 11. IP protocols, addressing, 12. Routing methods in WAN networks 13. Flow control between end systems in IP networks. 14. Congestion control methods in IP networks. 15. Network security 16. Selected network services and applications. | | | | | | | | |
|--|---|--|--|--------------------------|-------------------|-------------------------------|--------------|-------|--------|
| Prerequisites and co-requisites | There are no entry requirements | | | | | | | | |
| Assessment methods and criteria | <table border="1" data-bbox="450 362 1489 430"> <thead> <tr> <th data-bbox="450 362 794 398">Subject passing criteria</th> <th data-bbox="794 362 1139 398">Passing threshold</th> <th data-bbox="1139 362 1489 398">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="450 398 794 430">written exam</td> <td data-bbox="794 398 1139 430">50.0%</td> <td data-bbox="1139 398 1489 430">100.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | written exam | 50.0% | 100.0% |
| Subject passing criteria | Passing threshold | Percentage of the final grade | | | | | | | |
| written exam | 50.0% | 100.0% | | | | | | | |
| Recommended reading | Basic literature | Tannenbaum A.: Computer Networks. Prentice Hall Stallings W.: High Speed Networks and Internets. Prentice Hall | | | | | | | |
| | Supplementary literature | Nowicki K., Woźniak J. : Przewodowe i bezprzewodowe sieci LAN. Oficyna Wyd. PW. Nowicki K, Światowiak J.: Protokoły IPv6 Woźniak J., Nowicki K.: Sieci LAN, MAN, WAN - protokoły komunikacyjne. Wyd. Postępu Telekomunikacji Nowicki K.: Materiały z wykładu Sieci Ethernet; Krawczyk H., Kaczmarek S. Nowicki K.: Aplikacje i usługi a technologie sieciowe. PWN 2018 | | | | | | | |
| Example issues/ example questions/ tasks being completed | eResources addresses | | | | | | | | |
| Work placement | Description of network architectures and basic standards. Comparison of standard wired and wireless LAN networks. Comparison of network connection methods and devices. Description of addressing methods in LAN and WAN networks. Description of selected routing protocols and basic communication protocols in IP networks. Description of selected network applications. | | | | | | | | |
| | Not applicable | | | | | | | | |