#### card of course

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| Subject name | Operating systems |

1. The placement of the subject in the study system

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| 1.1. Field of study | Computer science |
| 1.2. Form and path of study | Full-time/Part-time |
| 1.3. Level of education | First-cycle studies |
| 1.4. Study profile | Practical |

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| 1. 5. Specialty | - |
| 1.6. Subject Coordinator | Dr Michał Kalisz; dr Rafał Stęgierski; mgr Emil Tomczyk; mgr inż. Jakub Duba |

2. General characteristics of the subject

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| 2.1. Belonging to a subject group | Directional/Practical |
| 2.2. Number of ECTS | 4 |
| 2.3. Language of lectures | Polish |
| 2.4. Semesters in which the subject is taught | II |
| 2.5.Criteria for selecting course participants | - |

1. Learning outcomes and course delivery
   1. Subject Objectives

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| --- | --- |
| No. | Subject Objectives |
|
| C1 | Familiarization with concepts and issues related to operating systems from a theoretical, historical and practical perspective. |
| C2 | Acquiring knowledge and practical skills in the field of server administration and its services. |
| C3 | Acquiring practical skills in securing and solving problems in system environments. |

* 1. Subject-specific learning outcomes, divided into knowledge , skills and competences , with reference to the directional learning outcomes

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| --- | --- | --- | --- | --- | --- | --- |
| No. | Description of subject  learning outcomes | Reference to  directional effects  learning (symbols) | Method of implementation (mark "X") | | | |
| ST | | NST | |
| Classes at the University | Activities on  the platform | Classes at the University | Activities on  the platform |
| After passing the course, the student knows and understands **the knowledge** | | | | | | |
| W1 | history, structure of server operating systems and their main tasks, e.g. installation, licensing, post-installation tasks, network interface operating modes, virtualization. | INF\_W05  INF\_W13 | X |  |  | X |
| W2 | main roles and functions, e.g. Active Directory domain service, DHCP server, DNS, NAT, ROUTNG, remote access. | X |  |  | X |
| W3 | diagrams and concepts related to the security of server systems, server management on a larger scale. | X |  |  | X |
| W4 | problems that may occur in server environments and ways to solve them. | X |  |  | X |
| After passing the course, the student is **able** to: | | | | | | |
| U1 | analyze documentation, obtain information from exercise manuals, the Internet, and professional IT literature, also in English. | INF\_U01 INF\_U08 INF\_U22  INF\_U24 INF\_U31 | X |  | X |  |
| U2 | implement post-installation tasks on the server, configure server interface parameters, and use virtualization. | X |  | X |  |
| U3 | configure server roles and functions, e.g. Active Directory, DHCP, DNS, NAT, routing, remote access. Can run their own server in the local network. | X |  | X |  |
| U4 | use the skills acquired during classes to further improve your qualifications and solve assigned tasks | X |  | X |  |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | |
| K1 | troubleshooting operating system problems and prioritizing tasks when working with the server. | INF\_K04  INF\_K05 | X |  | X |  |
| K2 | taking up a job as a server systems administrator. | X |  | X |  |

3.3. Forms of teaching and their number of hours - Full-time studies (ST), Part-time studies (NST)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Path | Lecture | Exercises | Design | Workshop | Laboratory | Seminar | Lecturer | Classes conducted using distance learning methods and techniques in the form of a lecture | Other | **ECTS points** |
| **ST** | 15 |  |  |  | 40 |  |  |  |  | 4 |
| **NST** |  |  |  |  | 15 |  |  | 10 |  | 4 |

3.4. Content of education (separately for each form of classes: (W, ĆW, PROJ, WAR, LAB, LEK, OTHER). It should be marked (X) how the given content will be implemented (classes at the university or classes on the e-learning platform conducted using distance learning methods and techniques)

TYPE OF CLASS: LECTURE

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| --- | --- | --- | --- | --- | --- | --- |
| No. | Content of the course | Reference to subject-specific learning outcomes | Method of implementation (mark "X") | | | |
| ST | | NST | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| 1. | Basics of operating systems. | W1 | X |  |  | X |
| 2. | Operating system installation methodology. | W1 | X |  |  | X |
| 3. | Discussing post-installation tasks. | W2 | X |  |  | X |
| 4. | Overview of system roles and services. | W2 | X |  |  | X |
| 5. | Domain services overview. | W2 | X |  |  | X |
| 6. | Active Directory overview (users, groups, other objects). | W2 | X |  |  | X |
| 7. | Concept of routing and remote access. | W2 | X |  |  | X |
| 8. | System security overview. Troubleshooting. | W3, W4 | X |  |  | X |
| 9. | Summary of classes and discussion of grades. |  | X |  |  | X |

TYPE OF CLASS: LABORATORY

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| --- | --- | --- | --- | --- | --- | --- |
| No. | Content of the course | Reference to subject-specific learning outcomes | Method of implementation (mark "X") | | | |
| ST | | NST | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| 1. | Installing the operating system. | U1 | X |  | X |  |
| 2. | Configuring server interfaces. | U2 | X |  | X |  |
| 3. | Deploying tasks after installation. | U2 | X |  | X |  |
| 4. | Configuring system roles and services. | U3 | X |  | X |  |
| 5. | Configuring domain services. | U3 | X |  | X |  |
| 6. | Managing users and groups. | U3 | X |  | X |  |
| 7. | Configuring routing and remote access. | U3 | X |  | X |  |
| 8. | Server Security Configuration. Troubleshooting. | U3, U4, K1, K2 | X |  | X |  |
| 9. | Summary of classes and discussion of grades. |  | X |  | X |  |

3.5. Methods of verifying learning outcomes (indication and description of methods of conducting classes and verification of achievement of learning outcomes and method of documentation)

Methods of verifying learning outcomes:

Lecture credits: written exam – multiple choice test

Assessment of the laboratory: individual laboratory task based on the assumptions prepared by the instructor, including:

1. Configuring 4 network interfaces for the server according to the given assumptions
2. Configuring DHCP Server services for LAN2 interface according to the given assumptions
3. Promoting a server to a domain controller
4. Configuring static routing to networks served by all server LAN interfaces.
5. Creating a hierarchical model of the organizational structure in the domain

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| --- | --- | --- | --- |
| Subject Effects | Teaching methods | Methods of verifying learning outcomes | Documentation methods |
| KNOWLEDGE | | | |
| W1-W4 | informative lecture enriched with multimedia presentation, demo shows | Written exam - multiple choice test | Exam sheet |
| SKILLS | | | |
| U1-U4 | practical exercises | Individual laboratory task based on assumptions prepared by the instructor.  (description above the table) | Solution documentation  in the form of screenshots |
| SOCIAL COMPETENCES | | | |
| K1-K2 | practical exercises, discussion and talk | Individual laboratory task based on the assumptions prepared by the instructor  (description above the table) | Solution documentation  in the form of screenshots |

3.6. Assessment criteria for the achieved learning outcomes

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| --- | --- | --- | --- | --- | --- |
| Learning effect | For a grade of 3 or "pass."  the student knows and understands/is able to/is ready to | For a grade of 3.5, the student knows and understands/is able to/is ready to | For a grade of 4, the student knows and understands/is able to/is ready to | For a grade of 4.5, the student knows and understands/is able to/is ready to | For a grade of 5, the student knows and understands/is able to/is ready to |
| W | 51-60% of knowledge indicated in learning outcomes | 61-70% of knowledge indicated in learning outcomes | 71-80% of knowledge indicated in learning outcomes | 81-90% of knowledge indicated in learning outcomes | 91-100% of knowledge indicated in learning outcomes |
| U | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |
| K | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |

3.7. Literature

**Basic:**

Craig Zacker, *„Instalowanie i konfigurowanie Windows Server 2012 R2”*, wyd. APN Promise, 2016

**Supplementary:**

Own materials/studies

4. Student workload - ECTS points balance

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| --- | --- | --- |
| **Types of student activity** | **Student Load** | |
| **ST** | **NST** |
| **Classes requiring direct contact between the student and the academic teacher at the university premises** | **55** | **25** |
| Classes included in the study plan | 55 | 25 |
| **Student's own work** | **45** | **75** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 20 | 35 |
| Preparation for passing classes | 25 | 40 |
| **TOTAL STUDENT HOURLY LOAD** | **100** | **100** |
| **Number of ECTS points** | **4** | **4** |

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| Last change date | 30/09/2024 |
| The changes were introduced | INF Education Quality Team |
| The changes were approved | Arkadiusz Gwarda, M.A. |