# GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

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| Subject name and code | Operating systems, PG_00045291 |
| Field of study | Data Engineering |

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| Date of commencement of studies | October 2023 | Academic year of realisation of subject | 2023/2024 |
| Education level | first-cycle studies | Subject group | Obligatory subject group in the field of study<br>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 | English |
| Semester of study | 1 | ECTS credits | 3.0 |
| Learning profile | general academic profile | Assessment form | exam |

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| Conducting unit | Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Michał Wróbel |

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| | Teachers | dr inż. Adam Kaczmarek<br><br>dr inż. Michał Wróbel<br><br>dr Paweł Weichbroth<br><br>dr inż. Katarzyna Łukasiewicz<br><br>mgr inż. Piotr Sokołowski |

| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|---|
| | Number of study hours | 15.0 | 0.0 | 15.0 | 0.0 | 0.0 | 30 |
| | 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 | 30 | 6.0 | 39.0 | 75 |

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| Subject objectives | The aim of the course is to familiarize students with the basics of operating systems, including file system, processes, and hardware management. Presentation of the basic commands and shell language structures. |

| Learning outcomes | Course outcome | Subject outcome | Method of verification |
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| | [K6_W04] Knows the architecture of computers, operating system processes, file systems, text processing programs, disk and ram memories management rules. Knows the problems of sharing the state, presentation and transformation of information in a distributed system, hypermedia technologies and related services, the architecture of interactive distributed simulation and agent interaction methods. | The student knows the basic architectures of computer systems. She/he understands the concept of processes, file systems, memory management and scheduling tasks. | [SW1] Assessment of factual knowledge<br>[SW3] Assessment of knowledge contained in written work and projects |
| | [K6_U01] programs in procedural, object, functional and logic programming languages, codes programs at the processor instruction level, runs and tests programs. | The student is able to program in the shell scripting language. She/he can test and modify shell scripts. | [SU1] Assessment of task fulfilment<br>[SU4] Assessment of ability to use methods and tools |

| Subject contents | 1. Operating system goals and definitions.<br>2. Operating system concept and its structual model<br>3. File concept system and its elements<br>4. File system, directory tree structure<br>5. Process model and implementation, fork function<br>6. Standard input/output, redirection rules, pipe function<br>7. Process and thread management<br>8. Context change, multiprocessing<br>9. Task scheduler, queues, preemptive multitasking<br>10. Disks and RAM memory management<br>11. Demand paging<br>12. Resource security, defenses mechanism<br>13. Shell properties and tasks<br>14. Basic shell commands<br>15. Text manipulation programs<br>16. Programming in bash language, script role<br>17. Script writing guidelines, parameters control<br>18. Operating system installation and configuration<br>19. Linux features, its distribution |
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| Prerequisites<br>and co-requisites | No requirements |
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| Assessment methods<br>and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
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| | laboratory | 50.0% | 50.0% |
| | exam | 50.0% | 50.0% |

| Recommended reading | Basic literature | 1. Silberschtz A. ed. : Podstawy systemów operacyjnych, WNT, 2006,<br>2. Prata S.: Biblia systemu UNIX V, LT&P, 1994,<br>3. Southerton A. ed. : Słownik poleceń systemu UNIX, WNT, 1995, |
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| | Supplementary literature | 1. Nemeth E. ed. : Przewodnik administratora systemu UNIX, NT, 1998,<br>2. Kaczmarek J.: Szkoła systemu Linux, Helion, 2007. |
| | eResources addresses | Adresy na platformie eNauczanie: |

| Example issues/<br>example questions/<br>tasks being completed | 1. Linux administration<br>2. Bash scripts writing<br>3. Scheduling<br>4. Memory management |
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| Work placement | Not applicable |
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