



## Subject card

Subject name and code	Operating systems, PG_00045291						
Field of study	Data Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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		
Conducting unit	Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Wróbel					
	Teachers	dr inż. Michał Wróbel dr Paweł Weichbroth dr inż. Katarzyna Łukasiewicz					
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
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		
	[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.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		
	[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.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		

Subject contents	<ol style="list-style-type: none"> <li>1. Operating system goals and definitions.</li> <li>2. Operating system concept and its structural model</li> <li>3. File concept system and its elements</li> <li>4. File system, directory tree structure</li> <li>5. Process model and implementation, fork function</li> <li>6. Standard input/output, redirection rules, pipe function</li> <li>7. Process and thread management</li> <li>8. Context change, multiprocessing</li> <li>9. Task scheduler, queues, preemptive multitasking</li> <li>10. Disks and RAM memory management</li> <li>11. Demand paging</li> <li>12. Resource security, defenses mechanism</li> <li>13. Shell properties and tasks</li> <li>14. Basic shell commands</li> <li>15. Text manipulation programs</li> <li>16. Programming in bash language, script role</li> <li>17. Script writing guidelines, parameters control</li> <li>18. Operating system installation and configuration</li> <li>19. Linux features, its distribution</li> </ol>		
Prerequisites and co-requisites	No requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	50.0%	50.0%
	laboratory	50.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Silberschtz A. ed. : Podstawy systemów operacyjnych, WNT, 2006,</li> <li>2. Prata S.: Biblia systemu UNIX V, LT&amp;P, 1994,</li> <li>3. Southerton A. ed. : Słownik poleceń systemu UNIX, WNT, 1995,</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Nemeth E. ed. : Przewodnik administratora systemu UNIX, NT, 1998,</li> <li>2. Kaczmarek J.: Szkoła systemu Linux, Helion, 2007.</li> </ol>	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Linux administration</li> <li>2. Bash scripts writing</li> <li>3. Scheduling</li> <li>4. Memory management</li> </ol>		
Work placement	Not applicable		