GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Operating Systems, PG_00047649		
Field of study	Informatics		
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	blended-learning
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department Of Software Engineering -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Wróbel	
	Teachers	dr inż. Adam Kaczmarek dr inż. Krzysztof Cwalina dr inż. Michał Wróbel mgr inż. Małgorzata Pykała mgr inż. Marcin Kwiatkowski dr inż. Piotr Grall dr inż. Piotr Rajchowski dr inż. Wojciech Siwicki	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	E-learning hours included: 8.0						

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	60	5.0	60.0	125

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_U42] can apply tools and methods of designing, optimization, monitoring, management, increasing reliability and protection from safety hazards in local and distributed information systems and applications	The student understands the concept of processes in the computer system and their management in the operating system. Students is be able to manage the running processes.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
	[K6_W03] knows and understands, to an advanced 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	The student defines the features of the file system. The student describes disk and RAM management. She or he understands the policies of task scheduling in the kernel of the operating system.	[SW1] Assessment of factual knowledge
	[K6_W04] knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	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
	[K6_W43] Knows and understands, to an advanced extent, standards and methods of IT systems administration, monitoring of processes occurring in them and immunising them to undesirable phenomena and activities	Student is able to administer Linux and Windows resources. She or he understands the policy of access to system resources.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	The student knows and is able to use text processing programs. She or he Is able to design, implement and test shell scripts	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment

Subject contents

1. Operating system goals and definitions.
2. Operating system concept and its structual model
3. File concept system and its elements
4. File system, directory tree structure
5. Process model and implementation, fork function
6. Standard input/output, redirection rules, pipe function
7. Process and thread management
8. Context change, multiprocessing
9. Task scheduler, queues, preemptive multitasking
10. Disks and RAM memory management
11. Demand paging
12. Resource security, defenses mechanism
13. Shell properties and tasks
14. Basic shell commands
15. Text manipulation programs
16. Programming in bash language, script role
17. Script writing guidelines, parameters control
18. Operating system installation and configuration
19. Linux features, its distribution

Prerequisites and co-requisites

No requirements

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>laboratory</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>eCourse</td><td>50.0%</td><td>10.0%</td></tr>
<tr><td>exam</td><td>50.0%</td><td>40.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Silberschtz A. ed. : Operating System Concepts, Wiley, 2021,
2. Albing C., Vossen JP: bash Cookbook: Solutions and Examples for bash Users, 2017,</td></tr>
<tr><td>Supplementary literature</td><td>1. Nemeth E. ed. : Przewodnik administratora systemu UNIX, NT, 1998,
2. Kaczmarek J.: Szkoła systemu Linux, Helion, 2007.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Systemy Operacyjne - 2022/23 - Moodle ID: 27262
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27262</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">1. Linux administration
2. Bash scripts writing
3. Scheduling
4. Memory management</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.