



## Subject card

Subject name and code	Operating Systems, PG_00038298						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	October 2024	Academic year of realisation of subject				2024/2025	
Education level	second-cycle studies	Subject group				Specialty subject group Subject group related to scientific research in the field of study	
Mode of study	Part-time studies	Mode of delivery				at the university	
Year of study	1	Language of instruction				Polish	
Semester of study	2	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				exam	
Conducting unit	Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Robert Smyk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	0.0	0.0	20
	E-learning hours included: 0.0						
	Adresy na platformie eNauczenie:						
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	20		4.0		26.0	50
Subject objectives	<ul style="list-style-type: none"><li>- Learn the basics of management and administration of a typical OS (Operating System)</li><li>- Knowledge of safety rules typical OS</li><li>- Learn the basics of configuration</li><li>- Architecture of typical SO</li></ul>						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_U12] can program and implement network applications with typical protocols		uses the basic utilities available in text mode and graphics mode to configure and administer the operating system			[SU1] Assessment of task fulfilment	
	[K7_W02] has a structured knowledge of the application of information systems to improve the reliability, efficiency, speed and mobility of control and management systems		knows the role of the operating system as computer resource management software, it understands the functions of the basic modules included in the operating system			[SW2] Assessment of knowledge contained in presentation	
Subject contents	Introduction to operating systems. Command interpreter, scripts, redirection of input - output, environmental variables. The structure of operating system, the interrupt mechanism, types of memory components of the operating system, system services. Management, controlling of the processes, threads. Synchronization of processes. Classic problems of synchronization. Deadlock handling methods, prevention and avoidance. Memory management. Segmentation. Paging. Virtual memory, virtual memory algorithms. File system interface, directory structure, method of allocation of disk space. Disk management. Distributed file systems. I/O system, interrupts, direct memory access (DMA) software interface for I/O. Security of operating systems. Characteristics of selected operating systems (Windows and Unix). Operating systems for mobile devices (PDA, cellular phone).						
Prerequisites and co-requisites	Knowledge of basic concepts and skills acquired during the computer science course. Basic knowledge of programming.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Rating of individual work during exercise	60.0%	20.0%
	Periodic Reporting	60.0%	80.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. A. Silberschatz, P. B. Galvin, Podstawy systemów operacyjnych, WNT, Warszawa 2006.</li> <li>2. A. S. Tanenbaum, Systemy operacyjne. Wyd. 3, Helion, Gliwice 2010.</li> <li>3. W. Stallings, Systemy operacyjne. Struktura i zasady budowy, PWN, Warszawa 2006.</li> <li>4. K. Stencel, Systemy operacyjne, Wydawnictwo PJWSTK, Warszawa 2004.</li> <li>5. K. Lal, T. Rak, Linux. Komendy i polecenia. Praktyczne przykłady, Helion, Gliwice 2010.</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Ł. Sosna, Linux. Komendy i polecenia. Wyd. 3, Helion, Gliwice 2010.</li> <li>2. W. Stanisławski, D. Raczyński, Programowanie systemowe mikroprocesorów rodziny x86, PWN, Warszawa 2010.</li> <li>3. B. Goodheart, J. Cox, Sekrety magicznego ogrodu. UNIX System V Wersja 4 od środka. Podręcznik, WNT, Warszawa 2001.</li> </ol>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<p>Understanding the principles of working in the Linux command line.</p> <p>Preparation of the basic configuration.</p> <p>Basics of Linux firewall configuration.</p> <p>Administration and management of the basic system services.</p>		
Work placement	Not applicable		

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