



Subject card

Subject name and code	System Software, PG_00053912						
Field of study	Informatics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2028/2029		
Education level	first-cycle studies	Subject group			Optional subject group 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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Computer Architecture -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tomasz Dziubich					
	Teachers	dr inż. Tomasz Dziubich					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	15.0	0.0	45
	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	45	6.0	24.0	75		
Subject objectives	Understanding of low-level software develop process (OS services and drivers)						
Learning outcomes	Course outcome	Subject outcome	Method of verification				
Subject contents	Course content – lecture 1. Introduction 2. System software basis for control and management of the computer system 3. Generation of executable code: compilation, linking, loading direct and relocatable, static and dynamic libraries 4. Structure of compiled and linked files i 16- and 32-bit modes (public symbols, memory models) 5. Object and executable file formats (a.out, ELF, OMF, DOS EXE, COFF, NE, PE) 6. Low level processor mechanisms supporting OS developer 12. API as abstraction layer between application and operating system kernel, API as a virtual machine definition 13. API level structure, classifying of Win32 API functions, implementation with dynamic link libraries 14. Memory management problems, allocation and deallocation of memory, fragmentation, protecting 15. Structure of process memory (code, static data, stack, heap) 16. Chained file allocation method in MS Windows (file allocation table, directories) 17. Indexed file allocation method in Linux system (i-node, file handle tables); files and processes 18. Files reading and writing with API function in Linux and MS Windows systems 19. Directory search methods (opendir, readdir) 20. API functions process management, parent and child process 21. Multithreading processing with API functions) 23. Signal and its properties, signal service, reliable and unreliable signals 24. Signal receiving technique 25. Peripheral drivers in Linux operating system 26. Peripheral drivers in MS Windows operating system (WDM)						
Prerequisites and co-requisites	knowledge of assembler and C language, computer architecture and concurrent processing						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	Midterm colloquium	40.0%	50.0%				
	Project	50.0%	50.0%				
Recommended reading	Basic literature	M. Russinovich D. Solomon, A. Ionescu: Windows Internals: Including Windows Server 2008 and Windows Vista, 5th Ed. Microsoft Press, 2009 W. Oney: Programming the Microsoft Windows Driver Model, 2th Ed. Microsoft Press, 2002 R. Love: Linux Kernel Development, 3rd Ed., Addison-Wesley Professional, 2010					
	Supplementary literature	No requirements					
	eResources addresses						
Example issues/ example questions/ tasks being completed							

Practical activities within the subject	Not applicable
---	----------------

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