

表 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming of Electronic Systems, PG_00048673							
Field of study	Electronics and Telecommunications							
Date of commencement of studies	February 2023		Academic year of realisation of subject		2022/2023			
Education level	second-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	1		Language of instruction		Polish			
Semester of study	1		ECTS credits		2.0			
Learning profile	general academic profile		Assessment form		assessment			
Conducting unit	Department of Metrology and Optoelectronics -> Faculty of Electronics, Telecommunications and Informatics							
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Kowalewski					
	Teachers		dr inż. Michał Kowalewski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	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		4.0		16.0		50
Subject objectives	Programming of measurement equipment, control of PC interfaces, learning methods of increasing software efficiency (Win32 API, DLL, ODBC), multithread applications design.							

Learning outcomes	Course outcome	Subject outcome	Method of verification		
	[K7_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it	Uses object-oriented programming techniques and MFC library in MS Visual C++ applications. Optimizes applications using preprocessor directives, namespaces, multibit variables, and handling exceptions. Proves skills of low-level programming for Windows with Win32 API. Constructs and uses Dynamic Link Libraries in Windows applications. Programs RS232, USB and GPIB interfaces and controls measurement equipment with use of SCPI language. Integrates applications with database infrastructure with use of ODBC. Realizes multithread applications, by managing threads execution and organizing access to shared resources with use of	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
	[K7_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	synchronization objects. Uses object-oriented programming techniques and MFC library in MS Visual C++ applications. Optimizes applications using preprocessor directives, namespaces, multibit variables, and handling exceptions. Proves skills of low-level programming for Windows with Win32 API. Constructs and uses Dynamic Link Libraries in Windows applications. Programs RS232, USB and GPIB interfaces and controls measurement equipment with use of SCPI language. Integrates applications with database infrastructure with use of ODBC. Realizes multithread applications, by managing threads execution and organizing access to shared resources with use of synchronization objects.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation		
Subject contents	 Introduction: course outline, course grading Programming for Windows with Win32 API Methods of increasing software efficiency Object-oriented programming Programming in C# Specification, design and usage of Dynamic Link Libraries Programming of communication interfaces Integration of PC-based electronic system with ODBC Methodology of multithread applications design Graphical programming with OpenGL Programming of measurement instrumentation in Linux Programming for Android 				
Prerequisites and co-requisites	Basic programming in C.				
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade		
	Active participation in the lecture	50.0%	10.0%		
	Laboratory exercises	50.0%	30.0%		
	Test	50.0%	60.0%		

Example issues/ example ussues/ example questions/ I. Daachba rethods of sending and retreving messages toffrom message queue in a Win32 API winack to far process addresses Example issues/ example questions/ tasks being completed 1. Daachba rethods of sending and retreving messages toffrom message queue in a Win32 API with a memplement with the task of a preprocess on a whon it is executed? What are the differences between conditional methods of controlling when using bits?						
Gliwice, 1999. Wilams AI,MFC Czarna księga. Wydawnictwo Helion, Gliwice, 1999. Danluk Andrzej, RS 232C Praktyczne programowanie. Wydawnictwo Helion, Gliwice, 2001. Mielczarek Wojciech, USB. Uniwersalny interfejs szeregowy. Wydawnictwo Helion, Gliwice, 2005. Supplementary literature Winiecki Wieslaw, Stanik Sławonir, Nowak Jacek, Graficzne zintegrowane śródowska programowe do projektowania komputerowych systemów pomiarowe- kontrolnych. Wydawnictwo Helion, Gliwice, 2005. Mielczarek Wojciech, USB. Uniwersalny pomiarowe. Standardy IEEE 488,2 I SCPI. Wydawnictwo Politechnik Słąskiej, Gliwice, 2004. Wilezerek Wojciech, Sennett David, Visual C++6 Programowanie dla Internetu I ActiveX., Wydawnictwo Helion, Gliwice, 2001. Wilams Mickey, Bennett David, Visual C++6 Programowanie dla Internetu I ActiveX., Wydawnictwo Helion, Gliwice, 2001. Swisulski Dariusz, Komputerowa technika pomiarowa. Oprogramowenie wirtualnych przyrządów pomiarowa. Oprogramowenie wirtualnych przyrządow pomiarowych u LabView. Agenda Wydawnicza Politechniki Warszawskiej, Warszawa, 1997. Example issues/ example questions/ tasks being completed 1. Describe methods of sending and retrieving messages to/from message queue in a Win32 API application? What is the task of a preprocessor and when it is executed? What are the differences between controlling mitruit variables. 5. Describe wortpos orithoral sections. mutual exclusions and exploit finarito variables. 2. Describe methods of sending and retrieving messages to/from message queue in a Win32 API application? 2. W	Recommended reading	Basic literature	Lippman Stanley B., Podstawy języka C++. Wydawnictwo Naukowo- Techniczne, Warszawa, 1994.			
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