GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming of computer systems, PG_00055399					
Field of study	Mechatronics					
Date of commencement of studies	October 2021		Academic year of realisation of subject		2021/2022	
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		Polish	
Semester of study	2		ECTS credits		6.0	
Learning profile	general academic profile		Assessment form		exam	
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology					
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marek Galewski			
	Teachers		dr hab. inż. Marek Galewski			
			dr inż. Yurii Tsybrii			

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	30.0	0.0	60
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						
	Programowanie Systemów Komputerowych, WP, MTR, I st., sem. 02, letni 2021/22 (PG_00055399) - Moodle ID: 20724 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=20724						

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	16.0	74.0	150

Subject objectives	Teaching students of structural (in C language) and object oriented programming (n Java) basics, relational databases and essentials of software engineering (software lifecycle, developement methods, system modelling).

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U05] is able to use properly choosen tools to compare design solutions of elements and mechatronics systems according to given application and economic crtierions (e.g. power demand, speed, costs)	Student presnts basic skills in modern programming tools and techniques (e.g. C, Java, NetBeans, UML, SQL)	[SU4] Assessment of ability to use methods and tools
	[K6_U09] is able to formulate an algorithm, knows low and high level programming languages and appropriate IT tools for developing computer programmes to control mechatronic system	Student develops simple structural and object oriented programs in C and Java	[SU1] Assessment of task fulfilment
	[K6_W06] has organized knowledge in terms of informatic and methods of analog and digital signal processing	Student understands basic principles of structural and object oriented programming	[SW1] Assessment of factual knowledge
	[K6_W11] has a basic knowledge about the life cycle of mechatronic systems and objects	Student describes life cycle of IT systems and selected methods of developement of sych systems	[SW1] Assessment of factual knowledge

Subject contents	Programming in C language: basic elements of the C language, basic elements of program, functions, conditional statements, loops, I/O operations, array operations, strings, pointers; Programming in Java language: basic elements of the Java language, elements of object oriented programming (Classes, objectd, inheritance), I/O operations, collections, programming for GUI ; UML modelling language; Software engineering: software life-cycle, developement tehniques Relational databeses (SQL); Introduction to Artifficial Intelligence algorithms		
Prerequisites and co-requisites	Passed Computer Systems course.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Individual project	50.0%	20.0%
	Obligatory laboratory excercises	60.0%	20.0%
	Exam	52.0%	60.0%
Recommended reading	Basic literature	[1] M. Galewski: Lecture materials published at the web site of the chair of Mechanics and Mechatronics [2] M. Galewski, P. Duba: Laboratory exercises handbooks	
	Supplementary literature	Kernighan B.W, Ritchie D.M, Język ANSI C. Programowanie. wyd. II, Helion, 2020 Horstmann C.S, Java. Podstawy. Helion, 2019 (ew. wcześniejsze, ale niezbyt stare wydania) Schmuller J., UML dla każdego, Helion 2003 Flasinski, M., Introduction to Artiffical Intellignece, 2016 Rutkowska D., Piliński M., Rutkowski L., Sieci neuronowe, algorytmy genetyczne i systemy rozmyte, PWN, Warszawa, 1997	
	eResources addresses	Programowanie Systemów Komputerowych, WP, MTR, I st., sem. 02, letni 2021/22 (PG_00055399) - Moodle ID: 20724 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=20724	
Example issues/ example questions/ tasks being completed	The list of sample questions for the exam (around 50) and laboratory individual projects (around 40) are given to the student during the semester. Sample examination questions: - How does type cast operation work? When do we use it and why? Provide examples of type casting in C. - What is pointer data type used for? When do we use it? What are it's advantages? What danger it brings for a program? Provide an example of pointer declaration and initialization. - Describe principles of Object Oriented Analysis, Modelling and Design. - Describe basic elements of relational data model.		
Work placement	Not applicable		