



Subject card

Subject name and code	Programming Techniques, PG_00047806						
Field of study	Informatics						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2021/2022		
Education level	first-cycle studies	Subject group			Optional subject group		
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			5.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Microelectronic Systems -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Maciej Kokot					
	Teachers	dr inż. Maciej Kokot dr hab. inż. Zbigniew Łubniewski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						
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	5.0		90.0	125	
Subject objectives	Getting familiar with programming techniques. Acquisition of skills for readable and reliable programming. Knowledge of programming support tools - compiler, linker, debugger. Understanding the principles of structured programming and object-oriented, polymorphism, encapsulation, inheritance.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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	Student knows the difference between structured programming and object-oriented, understand the concept of polymorphism and inheritance. He can program structurally and object-oriented. The student is able to plan the course of work needed to produce the software. Can appropriately select development environment. He can produce software and test it	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
	[K6_W42] Knows and understands, to an advanced extent, architecture, design principles and methods of hardware and software support for local and distributed information systems, including computing systems, databases, computer networks and information applications, as well as the principles of human cooperation with computers and computer-aided teamwork	Student knows the various programming models. He knows the evolution of the models and programming languages	[SW1] Assessment of factual knowledge
	[K6_U08] while identifying and formulating specifications of engineering tasks related to the field of study and solving these tasks, can: - apply analytical, simulation and experimental methods, - notice their systemic and non-technical aspects, - make a preliminary economic assessment of suggested solutions and engineering work	The student is able to plan the course of work needed to produce the software. Can appropriately select development environment. He can produce software and test it	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information
	[K6_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	Student knows the difference between structured programming and object-oriented, understand the concept of polymorphism and inheritance. He can program structurally and object-oriented.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
	[K6_U41] can produce, test or evaluate software using modern programming platforms, tools, languages and paradigms of different levels, as well as use software packages supporting scientific and research processes as well as business decision-making processes and teamwork	The student is able to plan the course of work needed to produce the software. Can appropriately select development environment. He can produce software and test it	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
Subject contents	Introduction. Programs properties. Programming style rules. Code readability. Structural programming. Non-structural exceptions Code programming techniques. Modular programming. Graphical representation of code. Programming tools – compiler, debugger, linker. Header files. Make and its applications. Makefile and its rules. Advanced usage of make. Hierarchical programming as object oriented concept. Inheritance, encapsulation, class members access. Object oriented programming. Polymorphism. Constructors and destructors. Generic programming. Structural versus object-oriented programming.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written exam	66.0%	50.0%
	Project	50.0%	50.0%
Recommended reading	Basic literature	1. D. van Tassel: Praktyka programowania. WNT, Warszawa. 2. Kernighan, Ritchie: Język C. WNT, Warszawa. 3. Stallman, McGrath, Smith: GNU Make. www.gnu.org/software/make/manual/	
	Supplementary literature	1. C++ bez cholesterolu. www.intercon.pl/~sektor/cbx/cbx.html	
	eResources addresses		
Example issues/ example questions/ tasks being completed			

Work placement	Not applicable
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