



## Subject card

Subject name and code	.NET Programming Languages, PG_00048004						
Field of study	Informatics						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2023/2024		
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	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Krzysztof Manuszewski				
	Teachers		dr inż. Krzysztof Manuszewski  mgr inż. Tomasz Goluch				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	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		2.0		18.0	50
Subject objectives	To improve the practice of C# and other programming languages available at .NET platform.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W03] Knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	Student understand the structure of .NET components and information exchange between components	[SW1] Assessment of factual knowledge
	[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 is able to use VS for purpose the implementation of .NET applications that contains GUI.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_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	Student is able to create applications in C#, VB. Student is able to mix the managed and unmanaged code in one application. Student utilises the abilities of CODE DOM	[SW1] Assessment of factual knowledge
	[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	Is able to implement .Net application with .Net languages like C#, LINQ, F#, C++/CLI	[SU1] Assessment of task fulfilment
	[K6_W05] Knows and understands, to an advanced extent, methods of supporting processes and functions, specific to the field of study	Student knows methods of implementation of local .NET components	[SW1] Assessment of factual knowledge

## Subject contents

1. Rules of assessment
2. .NET programming languages
3. C#'s basic syntax
4. CLR,C# - types and statements
5. CLR, C# - reference types and value types
6. Nullable types
7. CLR,C# - classes and structs; properties and its modifiers
8. CLR,C# - container is a classes and indexers
9. CLR,C# - jagged arrays
10. CLR,C# - class and method attributes
11. C# - exceptions
12. CLR, C# - events and delegates
13. CLR,C# - generics
14. C# - partial classes
15. C# - plugins support
16. LINQ
17. Anonymous types
18. Lambda expressions
19. VB.NET basic syntax
20. Common .NET elements for VB
21. C++ Managed extension
22. C++ Managed and unmanaged code
23. Common .NET elements for C++
24. Managed opaques for ANSI C++
25. Using unmanaged code with VB/C#

	26. Jscript/VBScript Elements		
	27. Test		
Prerequisites and co-requisites	Object oriented programming.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercise	50.0%	50.0%
	Midterm colloquium	50.0%	50.0%
Recommended reading	Basic literature	C# in Depth / Jon Skeet, <a href="#">Manning Publications</a>  <a href="#">Expert F# 4.0</a> / Don Syme, Adam Granicz, Antonio Cisternino, Apress	
	Supplementary literature	Essential C# 8.0, Mark Michaelis, Addison-Wesley  <a href="#">C# 8.0 in a Nutshell</a> , Joseph Albahari, Eric Johanssen, O'Reilly  C# 9 with .NET, 10th edition, Apress 2021  LEARNING F# - autorami są osoby ze Stack Overflow  Expert .NET 2.0 IL Assembler, Serge Lidin, Apress	
	eResources addresses	Adresy na platformie eNauczanie: Języki Programowania na platformie .NET 2023/24 - Moodle ID: 34484 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34484">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34484</a>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		