



Subject card

Subject name and code	Programming of Computer Applications, PG_00063597						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group		Specialty 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		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Electrified Transportation -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Andrzej Wilk				
	Teachers		dr hab. inż. Andrzej Wilk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	0.0	0.0	20
	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	20		10.0		45.0	75
Subject objectives	The main objective of the subject is to apply the principles of object-oriented programming in a desktop application using C# language. The sub-objectives that make up the main objective are: defining classes, defining properties, creating constructors, creating delegates, using lambda methods. Another group of sub-objectives is: using the mechanism of class inheritance, using encapsulation of class resources and using method polymorphism. The result of realizing all these objectives is the development of a desktop application of the Windows Presentation Foundation type on the passive RLC filter.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U12] is able to design and program computer applications using object-oriented programming, produce technical documentation technical documentation using CAD technology		Develops WPF applications and performs circuit simulations		[SU1] Assessment of task fulfilment		
	[K7_U06] is able to analyse, model, simulate and design electrical systems		Programs an electrical circuit simulator in a desktop application using object-oriented programming		[SU4] Assessment of ability to use methods and tools		
Subject contents	Lecture: The concept of a class. Constructors and destructors. Data fields, properties, methods, delegates and interfaces.Inheritance, encapsulation and method polymorphism.Developing Windows Presentation Foundation desktop applications - C# and XAML.Modeling an RLC electrical filter in a WPF application. Laboratory: Development a front-end using Extensible Application Markup Language to define controls representing RLC passive filter parameters. Development of a backend (C# language) for event handling, transmittance calculation and drawing the amplitude and phase spectrum of a passive RLC filter.						
Prerequisites and co-requisites	Basics of computer science						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	WPF project - RLC filter implementation		60.0%		100.0%		

Recommended reading	Basic literature	John Sharp: Microsoft Visual C# 2022 Krok po kroku, APN Promise, Warszawa 2022. Adam Nathan: WPF 4.5. Księga eksperta, Helion 2015.
	Supplementary literature	Mark J. Price : C# 11 i .NET 7 dla programistów aplikacji wieloplatformowych. Twórz aplikacje, witryny WWW oraz serwisy sieciowe za pomocą ASP.NET Core 7, Blazor i EF Core 7, Helion, 20222.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	What is inheritance?What is class resource encapsulation?Example of using lambda methods.	
Work placement	Not applicable	

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