



Subject card

Subject name and code	Design of Multilayer and Distributed Applications and Systems, PG_00063895						
Field of study	Informatics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2029/2030		
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			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Computer Architecture -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Jarosław Kuchta					
	Teachers	dr inż. Jarosław Kuchta					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	0.0	45
	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	45	3.0	27.0	75		
Subject objectives	Acquiring knowledge and skills to design applications running in multi-tier Internet systems						
Learning outcomes	Course outcome	Subject outcome		Method of verification			
	[K6_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	Creates project documentation web application or system Internet using known design patterns		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject			
	[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	Is able to use knowledge of programming methods and techniques when designing multi-layer and distributed applications and systems.		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools			
	[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	Knows architecture models internet application systems. Distinguishes architecture multi-layered and multi-stem. Knows the ways to split functions application between client and server. Knows the main design patterns distributed applications. Know principles of main constructions architectural layers.		[SW1] Assessment of factual knowledge			

Subject contents	Course content – lecture <ul style="list-style-type: none"> • Modeling and Designing Multi-Tier and Distributed Systems • Designing the Architecture of a Complex System • Designing the Logic Layer of a System • Principles of Designing the User Interface of a Complex System • Principles of Designing the Data Structure of a Complex System • Data Layer Design Patterns • Design Patterns for Passing Data Between Distributed Components • Service Layer Design Patterns • Web Application Construction Design Patterns • Web Application Presentation Layer Design Patterns 		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam during semester	50.0%	50.0%
	Project documentation	50.0%	50.0%
Recommended reading	Basic literature	Andrew S. Tanenbaum, Maarten Van Steen: Distributed Systems: Principles and Paradigms Core J2EE Pattern Catalog, http://www.corej2eepatterns.com/ Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides: Design Patterns: Elements of Reusable Object-Oriented Software	
	Supplementary literature	Guidelines, Patterns, and code for end-to-end Java applications. http://www.oracle.com/technetwork/java/catalog-137601.html	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • Differences between multilayer and multi-tier web-based system. • Ways to ensure the scalability of web applications running in the multitier system. • Design patterns used in the construction of web applications 		
Practical activities within the subject	Not applicable		

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