GDAŃSK UNIVERSITY OF TECHNOLOGY

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 2024	Academic year of realisation of subject	2027/2028
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		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Jarosław Kuchta	
	Teachers	dr inż. Jarosław Kuchta	

Lesson types and methods of instruction	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 multitier 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_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	Knows and understands at an advanced level the structure and principles of operation of multi-layer and distributed applications and systems.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[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

- 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	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

- 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

Work placement	Not applicable

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