

Subject card

Subject name and code	Software Architecture, PG_00203643						
Field of study	Informatics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study 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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		5.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Tomasz Borzyszkowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		0.0		65.0	125
Subject objectives	The subject is intended to provide students with an overview of the most commonly used design patterns related to object-oriented programming.As part of the course, students will learn the practical use of selected design patterns to solve typical programming problems.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[INFMU2_W04] knows and understands in depth the principles of designing and implementing complex software systems, the impact of system architecture on its concurrency, performance and scalability, concurrent and parallel processing models and their application in modern systems	The student is familiar with and understands the advanced principles governing the selection of architectural and behavioural patterns in terms of their direct impact on the non-functional parameters of complex systems, and is able to explain in detail the impact of a chosen architectural style on the scalability, performance and efficiency of concurrent processing models.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[INFMU2_W03] has in-depth knowledge of programming paradigms and architectures and advanced programming constructs; knows current trends in programming languages	The student provides an in-depth definition and characterisation of classic design patterns (constructive, structural, behavioural) and selected architectural patterns, explaining the historical context of their emergence and their adaptation to contemporary paradigms and trends in modern programming languages.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[INFMU2_U11] is able to ensure the availability, reliability and security of IT services, design and apply basic security mechanisms	The student is able to design application architecture using appropriate structural patterns (e.g. Proxy, Facade) and architectural patterns in order to isolate sensitive components, ensure fault tolerance (reliability) and implement basic service security mechanisms.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
Subject contents	The history behind design patterns Overview of structural design patterns Overview of structural design patterns An overview of behavioural design patterns Selected architectural patterns		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	51.0%	40.0%
	project presentation	51.0%	60.0%
Recommended reading	Basic literature	Gamma E., Helm R., Johnson R., Vlissides J. Wzorce projektowe. Elementy oprogramowania obiektowego wielokrotnego użytku.Freeman E&E, Bates B., Sierra K. Rusz głową ! Wzorce projektowe.	
	Supplementary literature	Adrian Ostrowski, Piotr Gaczkowski, Architektura oprogramowania bez tajemnic. Wykorzystaj język C++ do tworzenia wydajnych aplikacji i systemów, Helion 2022.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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