

Subject card

Subject name and code	Software Engineering, PG_00178055						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study 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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		7.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Department of Business Informatics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Bartosz Marcinkowski, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	45.0	0.0	0.0	75
	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	75		4.0		96.0	175
Subject objectives	- mastering intermediate-level knowledge and skills regarding modelling requirements, structure, dynamics and architectural aspects of information systems based on the UML language (and its profiles) - making students ready for the Object Management Group (OMG) Certified UML Professional certification						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEL3_U04] Students can build and interpret models of economic and social phenomena and processes for decision-making processes.	(1) is able to perform system requirements specification in several ways; (2) is able to identify use cases within a given application domain and synthesize them into a use case model; (3) is able to specify use cases using semi-formal and formal techniques; (4) is able to utilize CASE tool mechanisms for skeleton source code generation and reverse engineering, as well as introduce necessary corrections.	[SU2] presentation/project/paper/report
	[IiEL3_U06] The student can use and integrate knowledge of management and quality sciences, economics, and finance to resolve dilemmas and complex problems that arise in professional work.	(1) can specify general design constraints, including financial- and human resources-related ones; (2) utilizes leading design methodologies and addresses the risks arising from the application of each of them	[SU2] presentation/project/paper/report
	[IiEL3_U11] The student can engage and collaborate in teams, assuming different roles.	(1) is able to assume the role of a systems analyst, designer, and developer, while exchanging information with other project stakeholders; (2) is able to demonstrate responsibility for the project as a whole, regardless of the workflow decomposition.	[SU2] presentation/project/paper/report
	[IiEL3_W08] The student has advanced knowledge and understanding of the possibilities and dilemmas of using informatics and statistics tools and their importance in the context of changing needs.	(1) knows and understands the application and modeling categories of individual UML diagrams; (2) knows and understands the principles of applying individual types of UML dynamic diagrams to model use cases in an IT project according to the specific characteristics of those use cases.	[SW4] test/exam - oral or written
	[IiEL3_W04] The student has advanced knowledge and understanding of human roles, places, and behaviour in organizations or projects, both as individuals and in group and organizational dimensions.	Understands the IT needs of companies and institutions, as well as the goals and challenges within an IT team composed of computer scientists and prospective users.	[SW4] test/exam - oral or written
Subject contents	A. Topics of the lecture: • Systems Analysis & Design approaches and lifecycles • Techniques used across system planning phase • Requirements engineering • Building use cases models • Interaction modelling in UML • Activity diagrams • System structure modelling • State machines B. Lab/classroom topics: • Working in Scrum methodology • Documenting general system constraints • SRS document • SysML requirements model • Use Cases and their scenarios • Domain models • Sequence diagrams • Communication diagrams • Activity diagrams • Class diagrams • Source code generation • Reverse engineering • UML artifact transformations • State machines • Components and their deployment on nodes • Model integration and consistency checks		
Prerequisites and co-requisites	Relational database mechanics, object-oriented programming paradigm, implementation of operations, console and web programming environments		

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	51.0%	40.0%
	group project	51.0%	60.0%
Recommended reading	Basic literature	• Wrycza S., Marcinkowski B., Wyrzykowski K. (2006); UML 2.0 in Information Systems Modeling [Język UML 2.0 w modelowaniu systemów informatycznych]; Helion • Wrycza S., Marcinkowski B., Wyrzykowski K. (2012); UML 2.x. Advanced Exercises [UML 2.x. Ćwiczenia zaawansowane]; Helion • Online content provided by the lecturer via mdl.ug.edu.pl	
	Supplementary literature	• Object Management Group (2017); Unified Modeling Language Version 2.5.1; https://www.omg.org/spec/UML/2.5.1 • Sparx Systems (2025); Enterprise Architect User Guide; https://sparxsystems.com/enterprise_architect_user_guide	
	eResources addresses		
	Example issues/ example questions/ tasks being completed		
Work placement	Not applicable		

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