

Subject card

Subject name and code	Software Engineering, PG_00136700						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	Bachelor'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		8.0		
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				
	Teachers		dr hab. Bartosz Marcinkowski				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	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		25.0		100.0	200
Subject objectives	- mastering knowledge and skills concerning intermediate aspects of modelling requirements, structure, dynamics and implementation aspects of information systems based on the UML language and its profiles - getting ready for the Object Management Group (OMG) Certified UML Professional certification						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEL3_K02] The student can communicate with the public on computer science and econometrics topics in and outside the workplace, communicate his knowledge and share his skills through various media.	- discusses IT-related needs of companies and institutions as well as goals and problems in a team composed of IT experts and future users	[SK8] observation of student's independent or team work
	[liEL3_U04] The student can plan, design and program information systems to support the functioning of economic entities.	- specifies system requirements in a few ways - is able to identify use cases in a given application domain and synthesise them into a complete use case model, - skilfully specifies use cases using semiformal techniques, - is able to select specific techniques of the UML language according to the characteristics of the implemented project, - models interactions in the system using various diagrammatic techniques, - is able to draft a source code according to the sequence of interactions included in the diagram, - is able to use the mechanisms of a CASE tool for the generation of source code, - is able to reverse engineer selected UML artifacts from the source code, - is able to model sequential flows and object flows in the system, - is able to develop a data model of the system and make detailed specifications of attributes and operations, - constructs deployment models and correctly assigns components to the designed nodes	[SU2] presentation/project/paper/report
	[liEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	- can name and describe the purpose of various UML diagrams - defines the modelling categories of given UML diagrams, - discusses various techniques for specifying use cases, - explains the rationale for using different types of UML diagrams to model use cases in line with the specificity of these cases	[SW4] test/exam - oral or written
	[liEL3_K03] The student can work in, co-create and manage a team; adapts his/her behavior and conduct to his/her role in it; is ready to take responsibility for the team and bear the consequences; understands the necessity of regularity and consistency in action; is open to other team members and critical of himself.	- is capable of teamworking, - demonstrates responsibility for the project as a whole, - is task-oriented	[SK8] observation of student's independent or team work
	[liEL3_K01] The student understands the need to constantly supplement and deepen acquired knowledge; is open to new ideas and teaching methods.	- remains open to new IT solutions and technologies	[SK8] observation of student's independent or team work
	[liEL3_W07] The student has advanced knowledge of ethical norms applicable to business, good practices for its conduct and legal regulations for the protection of intellectual property. Has knowledge of the risks and responsibilities associated with the informatization of business processes, knows the principles of netiquette.	- discusses the leading design methodologies and the risks arising from the application of each of them	[SW4] test/exam - oral or written

	<table><tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr><tr><td>[liEL3_U03] The student is able to identify institutional-legal and social constraints on the functioning of economic structures and institutions and reflect them in modelling, forecasting and optimization.</td><td>- can specify general design constraints</td><td>[SU2] presentation/project/paper/report</td></tr></table>	Course outcome	Subject outcome	Method of verification	[liEL3_U03] The student is able to identify institutional-legal and social constraints on the functioning of economic structures and institutions and reflect them in modelling, forecasting and optimization.	- can specify general design constraints	[SU2] presentation/project/paper/report					
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Subject contents	A. Topics of the lecture: • Systems Analysis & Design approaches and lifecycles • Techniques used across system planning phase • Requirements engineering • Use cases • Interaction modelling in UML • Activity diagrams • System structure modelling • State Machines • Components and deployment B. Lab topics: • Working in Scrum methodology • Documenting general system constraints • SRS document • SysML requirements model • Use Cases and their scenarios • Sequence diagrams • Communication Diagrams • Activity Diagrams • Class Diagrams • Source code and transformations • State machines • Components and deployment • Integration, consistency checks, advanced tool functionality											
Prerequisites and co-requisites	Relational database mechanics, object-oriented programming and design paradigm, implementation of operations, console and web programming environments											
Assessment methods and criteria	<table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>group project</td><td>51.0%</td><td>60.0%</td></tr><tr><td>egzam</td><td>51.0%</td><td>40.0%</td></tr></table>	Subject passing criteria	Passing threshold	Percentage of the final grade	group project	51.0%	60.0%	egzam	51.0%	40.0%		
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Recommended reading	Basic literature	• Wrycza S., Marcinkowski B., Wyrzykowski K. (2006); Język UML 2.0 w modelowaniu systemów informatycznych; Helion • Wrycza S., Marcinkowski B., Wyrzykowski K. (2012); UML 2.x. Ćwiczenia zaawansowane; Helion • Online content provided by the lecturer										
	Supplementary literature	• Object Management Group (2017); Unified Modeling Language Version 2.5.1; https://www.omg.org/spec/UML/2.5.1 • Sparx Systems (2022); 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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