

Subject card

Subject name and code	Information Systems Modeling, PG_00156627						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
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	part-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish polish		
Semester of study	2		ECTS credits		4.0		
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. inż. Bartłomiej Gawin				
	Teachers		dr hab. inż. Bartłomiej Gawin				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	9.0	0.0	9.0	0.0	0.0	18
	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	18		20.0		65.0	103
Subject objectives	- acquiring knowledge and skills in advanced aspects of requirements modeling, structure, dynamics and implementation aspects of information systems based on the UML language and its profiles, - preparation for the Object Management Group (OMG) Certified UML Professional certification.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEMU2_K04] The student can work in a team, co-create it, effectively manage and supervise it; efficiently adapts his behavior and conduct to his role in it; is ready to take responsibility for the team and bear the consequences; understands the necessity of systematicity and consistency in action; is open to other team members and critical of himself.	Is able to work in an IT team, co-create it, effectively manage it and supervise it; efficiently adapts his/her behaviour and manner of conduct to the role played in it; is ready to take responsibility for the team and bear the consequences; understands the need for systematicity and consistency in action; is open to other team members and critical of himself/herself.	[SK2] presentation/project/paper/report [SK4] test/exam - oral or written
	[liEMU2_W04] The student has an in-depth knowledge of advanced mathematical, statistical, econometric and IT methods that enable the acquisition, processing and analysis of data reflecting the functioning and growth of the national economy and its components, as well as the phenomena and processes occurring in their environment.	Has in-depth knowledge of advanced IT methods enabling the acquisition, processing and analysis of data for the design of IT systems.	[SW2] presentation/project/paper/report
	[liEMU2_U03] The student is able to identify, to an in-depth degree, the institutional-legal and social constraints on the functioning of economic structures and institutions and reflect them in modeling, forecasting and optimization.	Is able to identify institutional, legal and social constraints on the functioning of economic structures and institutions and reflect them in the modeling, forecasting and optimization of IT systems.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[liEMU2_U09] The student has an in-depth ability to prepare written works, oral speeches and multimedia presentations on the functioning and growth of the national economy and its components, the course of complex economic phenomena and processes, the acquisition of data about them, their collection, processing and analysis with the help of modern mathematical, statistical, econometric and IT tools, as well as their use in modeling, forecasting and optimization.	Possesses in-depth skills in preparing written works, oral presentations and multimedia presentations on data acquisition, collection, processing and analysis using modern tools for the design of IT systems.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[liEMU2_U04] The student is able to plan, design, and program information systems at an advanced level, supporting the operation of business entities.	Is able to plan at an advanced level, design in UML notation and program IT systems that support the functioning of business entities.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[liEMU2_W03] The student has an in-depth knowledge of man as a subject who creates economic structures and institutions.	Has in-depth knowledge of man and his role in the design of information systems as an entity creating economic structures and institutions.	[SW2] presentation/project/paper/report
	[liEMU2_W07] The student has an extended and established knowledge of ethical norms applicable to business, good practices for its conduct and legal regulations for the protection of intellectual property. The student has an extended knowledge of the risks and responsibilities associated with the computerization of business processes. The student knows the principles of netiquette.	Has extensive knowledge of the risks and responsibilities associated with the computerization of economic processes (in particular, the design of IT systems).	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report

Subject contents	A. Lecture topics • Use case diagrams identification of PUs, advanced specification of relationships, introducing stereotypes to the model, managing the complexity of extended use case models using packages, • Use case specification documentation techniques, strengths and weaknesses of individual techniques, sources of obtaining data in an IT project, • Modeling interactions in an IT system conceptual, implementation and instance sequence diagrams, PU specification using implementation sequence diagrams, managing the sequence of interactions using fragments of extracted and referenced instances of interactions, transformation of a sequence diagram into a communication diagram, message syntax, scheduling diagrams, interaction control diagrams, • Activity diagrams PU specification, data modeling techniques on activity diagrams, extensions of the activity diagram for the needs of modeling real-time systems, • Class diagrams modeling the data structure in the system, implementing the data model, exemplification of the data structure using object diagrams, • State machine diagrams tracking the states of objects in the system, nesting state machines, pseudostates, Infrastructure modeling hardware and embedding software components using component diagrams and UML deployment. B. Lab Issues Developing coherent system specifications in group work, taking into account the skeleton source code, using diagrammatic techniques described in the lectures.		
Prerequisites and co-requisites	Methodological foundations of creating information systems, Types and scope of methods and techniques of designing information systems, Computer-aided creation of information systems CASE, relational databases, object-oriented design paradigm, class-attributes-operations, implementation of operations, communication protocols in computer networks		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	50.0%	50.0%
	oral exam	50.0%	50.0%
Recommended reading	Basic literature	A. Literature required for final crediting of classes (passing the exam): A.1. used during classes • Wrycza S., Marcinkowski B., Wyrzykowski K. (2006); Język UML 2.0 w modelowaniu systemów informatycznych; Helion • Gawin B. (2015); Systemy informatyczne w zarządzaniu procesami workflow; PWN	
	Supplementary literature	A.2. Literature for studied independently by the student • Object Management Group (2012); ISO/IEC 19505-2: Object Management Group Unified Modeling Language (OMG UML), Superstructure. Version 2.4.1; http://www.omg.org/spec/UML/ISO/19505-2/PDF • Materiały multimedialne na Portalu Edukacyjnym Uczelni B. Supplementary literature • Wrycza S., Marcinkowski B., Wyrzykowski K. (2012); UML 2.x. Ćwiczenia zaawansowane; Helion • Booch G., Rumbaugh J., Jacobson I. (2004); The UML Reference Manual, 2nd Edition; Addison-Wesley • Fowler M. (2004); UML Distilled, 3rd Edition; Addison-Wesley • http://www.sparxsystems.com/enterprise_architect_user_guide/11/index.html	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Create a project of an IT application in UML notation, the topic of which will be proposed by the project team.2. The designed IT system should contain 4 UML diagrams: use cases, activities (for one use case), sequences (for one use case) and classes (for the entire system).3. The designed IT system should contain requirements (SYSML).4. The designed IT system should contain a GUI model for one use case.5. The project should be prepared in the "eap" file, in the structure discussed at laboratory meetings.6. UML diagrams should be interconnected.		
Work placement	Not applicable		

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