



## Subject card

Subject name and code	Software engineering, PG_00045302						
Field of study	Data Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
Education level	first-cycle 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			English		
Semester of study	3	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Aleksander Jarzębowicz				
	Teachers		dr inż. Aleksander Jarzębowicz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	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	6.0		24.0		75
Subject objectives	The aim of the course is to introduce students to analysis and design as part of overall software project activities and to enable practical learning of UML as a tool for object-oriented analysis and design of IT systems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U02] designs, analyses correctness and creates functional specification of IT systems, selects appropriate measures, creates quality models, prepares and assesses their design documentation.	Designs and develops functional specification of information systems, selecting appropriate means, prepares analytical and design models as part of software project documentation			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_W05] Knows and understands programming models and evolution of related languages. Knows the methods of analysing and designing information systems and the modeling languages used in them, as well as the basic object-oriented programming platforms.	Knows methods of analysis and design of information systems and modelling languages used by such methods			[SW1] Assessment of factual knowledge		
Subject contents	<ol style="list-style-type: none"><li>1. Introduction</li><li>2. Scope and subject of software engineering. Essential motivations and concepts.</li><li>3. Areas of software engineering - an overview</li><li>4. Requirements engineering: requirements elicitation, analysis and validation</li><li>5. Requirements engineering: requirements specification</li><li>6. Conceptual modelling. Languages for modelling and specification.</li><li>7. Use cases</li><li>8. Object-oriented analysis using UML</li><li>9. Modelling of logical system structure: class diagrams</li><li>10. Modelling of system structure: other structural diagrams</li><li>11. Modelling system dynamics: sequence and communication diagrams</li><li>12. Modelling system dynamics: representing object's state</li><li>13. Design: system architecture</li><li>14. Design: system (high-level) design and class (low-level) design</li><li>15. Software reuse and design patterns</li><li>16. Software development models (software lifecycle models)</li><li>17. Software development methodologies (outline)</li></ol>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	50.0%
	Lab	50.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Pressman R., Software Engineering: a Practitioner's Approach, 8th edition, McGraw-Hill, 2014</li> <li>2. Booch G., Rumbaugh J., Jacobsen I.: The Unified Modeling Language User Guide (2nd Edition), Addison-Wesley, 2005</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Sommerville I., Software Engineering, 9th edition, Addison-Wesley, 2010</li> <li>2. Maciaszek L.: Requirements analysis and system design, Addison-Wesley, 2007</li> <li>3. Fowler M., Scott K.: UML distilled 3rd ed, Addison-Wesley, 2003</li> <li>4. McLaughlin B., Pollice G., West D., Head First: Object-Oriented Analysis and Design, O'Reilly Media, 2006</li> </ol>	
	eResources addresses	Adresy na platformie eNauczanie: Software Engineering 2022/2023 - Moodle ID: 23789 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=23789">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=23789</a>	
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> <li>• Draw a UML diagram (e.g. use case diagram, class diagram, state diagram) reflecting a given description of system requirements.</li> <li>• Describe a given software development model and discuss its strong and weak aspects.</li> <li>• Enumerate and describe requirements specification techniques.</li> </ul>		
Work placement	Not applicable		