



Subject card

Subject name and code	Software Engineering, PG_00047848						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
Education level	first-cycle studies	Subject group				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	3	Language of instruction				Polish	
Semester of study	5	ECTS credits				5.0	
Learning profile	general academic profile	Assessment form				exam	
Conducting unit	Department of Software Engineering -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksander Jarzębowicz					
	Teachers	dr inż. Aleksander Jarzębowicz					
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	5.0		60.0		125
Subject objectives	The course is focused on introducing to students the aspects of industrial software development: large systems, compliant to requirements of a specific customer, supporting business goals, providing a required level of quality characteristics, produced and maintained by large developers teams.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	The student uses Unified Modeling Language and designs the models of IT systems. Develops the vision document of the IT system including basic requirements and restrictions.			[SU1] Assessment of task fulfilment		

Subject contents	<p>Course content – lecture</p> <ol style="list-style-type: none"> 1. Introduction 2. Scope and subject of software engineering. Essential motivations and concepts. 3. Planning and defining scope of software project. Rich Picture. 4. Areas of software engineering - an overview 5. Conceptual modelling. Languages for modelling and specification. 6. Use cases 7. Object-oriented analysis using UML 8. Modelling of logical system structure: class diagrams 9. Modelling of system structure: other structural diagrams 10. Modelling system dynamics: sequence and communication diagrams 11. Modelling system dynamics: representing object's state 12. System design: system architecture 13. System design: high-level design 14. System design: class design (low level) 15. Foundations of software quality. Metrics of object-oriented design. 16. Software reuse 17. Classical design patterns 18. Other patterns (Internet Applications patterns, analysis patterns, architectural patterns, management patterns) 19. Risk and social responsibility related to IT systems 20. Requirements engineering: requirements determination 21. Requirements engineering: requirements specification 22. User interface design: motivations, terms, techniques 23. User interface design: Nielsen's heuristics and examples 24. Software testing: terms, place in software development process 25. Software testing: techniques (black/white box), levels of testing, managing tests 26. Software reviews and inspections 27. Software deployment 28. Software usage and maintenance 29. Configuration management and software evolution 30. Classical (waterfall) software lifecycle model 31. Non-classical software lifecycles and development processes 32. Adjusting development process to particular software project context 33. Outline of software project management 34. Software development and management methodologies 35. Properties of plan-driven and agile development 36. CASE tools 37. Other tools supporting software engineering 											
Prerequisites and co-requisites	<p>Presence during laboratory courses is mandatory. Delivery of all laboratory exercises and positive verification by tutor is required to pass the lab. Delays in delivering exercises affects the assessments. Only students who pass the lab are entitled to write the exam.</p>											
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Subject passing criteria</th> <th style="width: 30%;">Passing threshold</th> <th style="width: 30%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Lab (assignments & tests)</td> <td>50.0%</td> <td>50.0%</td> </tr> <tr> <td>Written exam</td> <td>50.0%</td> <td>50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Lab (assignments & tests)	50.0%	50.0%	Written exam	50.0%	50.0%
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Lab (assignments & tests)	50.0%	50.0%										
Written exam	50.0%	50.0%										
Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<ol style="list-style-type: none"> 1. Pressman R., Software Engineering: a Practitioner's Approach, 8th edition, McGraw-Hill, 2014 2. Sommerville I., Software Engineering, 9th edition, Addison-Wesley, 2010 3. Maciaszek L.: Requirements analysis and system design, Addison-Wesley, 2007 4. Booch G., Rumbaugh J., Jacobsen I.: The Unified Modeling Language User Guide, 2nd edition, Addison-Wesley, 2005 5. Fowler M., UML distilled, 3rd edition, Addison-Wesley, 2003 <p>No requirements</p>										
Example issues/ example questions/ tasks being completed												
Practical activities within the subject	Not applicable											

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