GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Software engineering, PG_00045302		
Field of study	Data Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
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_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
[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

<table>
<tr><td>Subject contents</td><td>1. Introduction
2. Scope and subject of software engineering. Essential motivations and concepts.
3. Areas of software engineering - an overview
4. System modelling. Languages for modelling and specification.
5. Use cases
6. Object-oriented analysis using UML
7. Modelling of logical system structure: class diagrams
8. Modelling of system structure: other structural diagrams
9. Modelling system dynamics: sequence, communication and activity diagrams
10. Modelling system dynamics: representing objects state
11. Requirements engineering: requirements elicitation, analysis and validation
12. Requirements engineering: requirements specification
13. Design: system architecture
14. Design: system (high-level) design and class (low-level) design
15. Software reuse and design patterns
16. Software development models (software lifecycle models)
17. Software development methodologies
18. Introduction to Scrum method</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Lab</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>Exam</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1. Pressman R., Software Engineering: a Practitioner’s Approach, 8th edition, McGraw-Hill, 2014
2. Booch G., Rumbaugh J., Jacobsen I.: The Unified Modeling Language User Guide (2nd Edition), Addison-Wesley, 2005</td></tr>
<tr><td>Supplementary literature</td><td>1. Sommerville I., Software Engineering, 9th edition, Addison-Wesley, 2010
2. Maciaszek L.: Requirements analysis and system design, Addison-Wesley, 2007
3. Fowler M., Scott K.: UML distilled 3rd ed, Addison-Wesley, 2003
4. McLaughlin B., Pollice G., West D., Head First: Object-Oriented Analysis and Design, O'Reilly Media, 2006</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Software Engineering 2023/2024 - Moodle ID: 30921
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30921</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>• Draw a UML diagram (e.g. use case diagram, class diagram, state diagram) reflecting a given description of system requirements.
• Describe a given software development model and discuss its strong and weak aspects.
• Enumerate and describe requirements specification techniques.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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