GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Scalabale Object-Oriented Systems Design, PG_00047967
Field of study	Informatics

Date of commencement of studies	October 2024	Academic year of realisation of subject	2027/2028
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	4	Language of instruction	Polish
Semester of study	7	ECTS credits	4.0
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. Michał Wróbel
	Teachers	dr inż. Michał Wróbel

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	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	4.0	51.0	100

Subject objectives	The aim of the course is to provide comprehensive knowledge enabling the design and implementation of scaled IT systems using the object-oriented paradigm. Within the scope of the course, students will become acquainted with SOLID principles and design patterns. In addition, elements of functional programming will be introduced. Popular service-oriented architectures (SOA) will also be discussed. Translated with DeepL.com (free version)

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W10] knows and understands to an advanced degree the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of study	Students are able to design and develop software systems in such a way that they can be easily maintained and developed.	[SW1] Assessment of factual knowledge
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	The student is able to use elements of the functional paradigm to increase the reliability of implemented information systems.	[SU1] Assessment of task fulfilment
	[K6_U08] while identifying and formulating specifications of engineering tasks related to the field of study and solving these tasks, can:n- apply analytical, simulation and experimental methods,n- notice their systemic and non-technical aspects,n- make a preliminary economic assessment of suggested solutions and engineering work n	The student understands and is able to apply SOLID object-oriented design practices in real applications.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_W04] knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	A student is able to: design for change by using design patterns.	[SW1] Assessment of factual knowledge

Subject contents	1. Object-oriented programming paradigm 2. SOLID principles 3. Creative design patterns 4. Structural design patterns 5. Behavioural design patterns 6. Elements of functional programming 7. Service-oriented architecture

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final exam	50.0%	35.0%
	Labaratory	50.0%	35.0%
	Projects	50.0%	30.0%

Recommended reading	Basic literature	1. Booch et al.: Object-Oriented Analysis and Design, with Applications. Addison-Wesley, 2007 2. Tegarden et al.: Systems Analysis and Design with UML. Wiley, 2012 3. Gamma et al.: Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley, Boston, MA, 1995 4. Maciaszek: Requirements Analysis and Systems Design. Addison-Wesley, 2007 5. Schach: Object-Oriented & Classical Software Engineering. McGraw Hill, New York, 2007
	Supplementary literature	1. Fowler: UML Distilled: A Brief Guide to the Standard Object Modeling Language. Addison-Wesley, 2004 2. Booch et al.: The Unified Modeling Language User Guide. Addison-Wesley, 2005 3. Martin & Odell: Podstawy metod obiektowych. WNT, 1997
	eResources addresses	Uzupełniające Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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